An Exploration of Botanic Garden – School Collaborations and Student Environmental Learning Experiences

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Abstract

Botanic gardens, as outdoor education settings, combine educating about the interdependence of people and plants, and the importance of protecting their habitats so that people's willingness to protect the environment is enhanced. This research has been conducted within a renewed interest in the educational significance of learning beyond the classroom in the UK, and considers that botanic gardens – school collaborations have the potential to overcome barriers to the provision of outdoor education. Additionally, such collaborations offer appropriate grounds to investigate the relationship of school-based and outdoor learning. This research looks for the factors that militate in favour of successful collaborations between botanic gardens and schools, and explores how such collaborations shape pupils' environmental learning experiences in the school and in the gardens.

My research entails an ethnographic multi case study of collaborations between Wakehurst Place and three local primary schools. I conducted my fieldwork during the school year 2006-2007, and my research techniques included participant observation, semi-structured interviews, informal talks, keeping fieldnotes, and collecting documents and artifacts. Data were analysed using thematic analysis techniques.

My research shows that the history of collaboration between the gardens and local schools, the organisations' interdependency, and the development of professional relationships between the individuals involved, are the overarching factors that contribute to the success of collaborations. In addition, acknowledging that experience can be conceptualised in different ways, this research has shown that successful botanic gardens – school collaborations can result in pupils' linking their environmental learning experiences across settings. Arguing that pupils merge the learning they acquire from different sources into a whole unit, and taking into account that individual behaviours are influenced by a variety of factors, it is suggested teachers and educators need to focus on encouraging pupils' critical thinking on environmental issues through environmental learning experiences in the gardens and at school.

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Chapter 1. Introduction to and overview of the research

1.1. The research focus and the 'original seeds'

Botanic gardens and schools join forces in order to achieve what they cannot achieve on their own or to achieve better results by co-working. The main aim of their collaboration is the provision of education related to each organisation's own educational mission. This research, which is an ethnographic case study, explores the collaboration of a British botanic garden with three local primary schools, and the learning opportunities accruing from their interaction; it focuses on the integration of learning at school with learning in outdoor education settings.

The seeds of my[1] research can be traced back to Greece, where as an environmental scientist with teaching qualifications I found my ideal work, as an educator at the Balkan Botanic Garden of Kroussia (BBGK) in Northern Greece. Since in Greece we do not have a great tradition or passion for gardening, and botanic gardens – in comparison with the British culture – my work turned out to be an eye opener to the world of botanic gardens, and gave me the opportunities to combine my professional knowledge and teaching skills with my interest in environmental education, especially raising people's awareness of the importance of plants in human life and ecosystems conservation. During this experience, which entailed planning and implementing environmental education activities for school visits, and leading guided tours for the wide public, I identified the relationships between botanic gardens and schools as important and as an interesting area for research. My willingness to develop further my professional expertise and especially gain knowledge on how to conduct research within the environmental education field, brought me to Bath University where I became part of CREE (Centre for Research for Education and the Environment). I decided to carry out my research in UK as it has a long tradition of botanic gardens, and also because I was interested to explore botanic garden education in a different context from Greece in order to enrich and expand my knowledge of the field, and also be influenced from a different and 'unknown world'.

[1] The use of the possessive adjective 'my' for this research is preferred rather than 'this' which implies a distant from the researcher and impersonal product. However, I must acknowledge that this is a shared ownership research between my research participants, my supervisors and me.

1.2. Positioning the research within contemporary fields and contexts

My research stems from my eagerness to improve my practice in developing an education department in a botanic garden, and also my teaching skills in an outdoor education setting, but it also bears an importance for the theory, research and practice within fields such as botanic gardens, environmental education and outdoor education. For that reason, before I explain my research questions, I shall locate my research within contemporary developments at both global and national levels. Starting from current environmental issues worldwide, I will move on to the role of botanic gardens in addressing these, and then focus botanic garden education and UK policy for outdoor education. Furthermore, I will identify relevant gaps within environmental and outdoor education research.

A diversity of interrelated, human made environmental problems affect the planet today from air and water pollution, depletion of natural resources, rainforest destruction, desertification, loss of biodiversity, ozone depletion, to climate change – which is one of the most contested, and with the most potential to have a widespread effect on the planet. According to the IPCC (Intergovernmental Panel on Climate Change), the global body established in 1988 to provide independent, scientific advice on climate change:

> Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level. Most of the global average warming over the past 50 years is very likely due to anthropogenic Greenhouse Gases increases (IPCC, 2007, p. 72). There is also high agreement and medium evidence that changes in lifestyle and behaviour patterns can contribute to climate change mitigation across all sectors (ibid, p. 59).

The public interest in climate change has been increasing, and that is depicted in the news coverage of the topic.

There are over 1,800 botanic gardens in the world that maintain the largest collection of plants outside natural contexts and which, as members of BGCI (Botanic Gardens Conservation International), have aligned themselves with international strategies for biodiversity conservation and sustainable development. Due to environmental degradation, and especially the effects of climate change, many plant species are

threatened in the wild by genetic impoverishment or even extinction. Botanic gardens' work contributes to *in situ* and *ex situ* conservation in a variety of ways, such as developing seed banks, managing and protecting areas of natural vegetation, maintaining natural areas within their boundaries, conducting research on plants for medicinal, environmental and other purposes, and offering taxonomic expertise to support international environmental conventions, land use planning, and identify invasive species (Willison, 2006).

Botanic gardens have an obvious and vital role to play in conserving plants and hence ecosystems, but conservation cannot succeed without education. With over 200 million visitors annually, worldwide, botanic gardens have the capacity to raise public awareness of environmental issues especially in relation to climate change and plant conservation (BGCI, 2006). Wyse Jackson (1999, p.27) highlighted the multidimensional role of botanic gardens by defining them as 'institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education'. Botanic gardens hold a history of educational activity which goes back hundreds of years concerning biological, medical and horticultural training. In relation to their connections with formal education, botanic gardens constitute an outdoor education setting where students have the opportunity to gain first hand experience of plants in their simulated or even natural habitats, and to understand complex ecological concepts in their real contexts.

Botanic gardens are outdoor education settings that can combine educating about the interdependence of people and plants and the importance of protecting their habitats, so that students' willingness to protect the environment (and hence themselves) is enhanced. A botanic garden is not a mere exhibition of living plant organisms as it is a scientific institution. Students who visit botanic gardens have the opportunity to learn about their contribution to flora conservation worldwide, and also to meet and interact with expert biologists, horticulturalists and environmentalists who conduct research and produce and promote up to date scientific knowledge in their fields. Teachers' opportunities to work with botanic garden educators[2] who assist with planning and topic choice is highlighted as a positive factor that motivates teachers to use the botanic garden as an educational resource (Sanders, 2005). Jones (2000) emphasized that botanic gardens educate young people about where their food comes from, and how their lives are dependent on plants. By housing plants from all over the world, botanic gardens create a global network of

[2] In this thesis the term teacher is used for school teachers, and the term educator is used for botanic gardens educators.

ecological interdependence: people and places are linked through the institution. Visitors in botanic gardens with a wide variety of plant collections develop the feeling that they belong in a global environment.

An exploration of the educational role of botanic gardens should not miss reference to the wider context of outdoor education whose progress in the UK over the last half century has not been easy. Although outdoor education in the 1950s and 60s gained popularity, especially with the establishment of various outdoor education centres which were mostly initiated by local authorities, the influence on mainstream education was rather limited. Since the 1970s, outdoor education in the UK has seen a decline partially because of reduced funding to local education authorities and a lack of a strong positioning of outdoor education in the school curriculum (Higgins & Morgan, 1999). Fisher (2001) notes that introduction of the national curriculum in England and Wales in 1988 contributed to the demise of science fieldwork in UK schools, as fieldwork was not seen as part of core national curriculum provision. Other factors were that teacher-time became increasingly focused on assessable aspects of children's experience, and safety pressures increased following high-profile accidents. Constrains of time, a lack of training for teachers, and the lack of teacher enthusiasm are other factors determining the decrease of biology and other fieldwork in the UK as Barker *et al.* (2002) illustrate.

Within contemporary educational discourse, however, there is evidence of renewed interest in the educational significance of learning beyond the classroom. Her Majesty's Inspectors (HMI), working with Ofsted, evaluated the personal development aspects of outdoor education, with specific focus on the work of outdoor education centres (Ofsted, 2004), and in January 2005, the House of Commons Education and Skills Select Committee set out the importance and value of education outside the classroom to children and young people. A highlight of the current policy is the publication of 'Learning Outside the Classroom Manifesto' by the Department of Education and Skills (renamed as Department for Children, Schools and Families in 2007). The document includes a set of key aims for practical action which stakeholders can pledge to support. According to the Manifesto:

> We believe that every young person should experience the world beyond the classroom as an essential part of learning and personal development, whatever their age, ability or circumstances (DfES, 2006a, p. ii).

In the light of increased interest in out-of-classroom experiences, it is not surprising that research in educational activities that takes place in outdoor settings is a growing area of

interest. Rickinson *et al.*'s (2004, pp. v-vi) research review on outdoor learning identified barriers to the provision of outdoor education:

> (i) fear and concern about health and safety; (ii) teachers' lack of confidence in teaching outdoors; (iii) school and university curriculum requirements limiting opportunities for outdoor learning; (iv) shortages of time, resources and support; and (v) wider changes within and beyond the education sector.

Schools' collaborations with outdoor education settings could be one way to overcome those barriers, and an interesting initiative to investigate. In addition educational collaborations have come to the fore in the UK recently as an integral part of many initiatives aiming for school improvement and raising students' achievements (Connolly & James, 2006). Research on partnerships/collaborations (the terms can usually be used interchangeably as will be explained in the literature review) across schools, or between schools and other organisations, including environmental education and museum education settings, usually focuses on the learning outcomes for the participants, adults or young people and as a result the conditions created by the collaboration, and the collaboration as a phenomenon is overlooked (for example Storksdieck *et al.*, 2005; Bunderson & Cooper, 1997; Dori & Tal, 2000; Bodzin, 2008; Bainer *et al.*, 2000). Moreover, when research examines the views of participants on the collaboration, the focus is on adults' views that is, teachers', educators' and students' perspectives of the partnership can be overlooked (for example, Cobb & Quagglia, 1994; Bainer & Williams, 1996; Tal, 2004). Also, the learning process of outdoor experiences and the relationship between indoor and (i.e. in-school/college) and outdoor/out of school learning need more in-depth consideration within outdoor education research (Rickinson *et al.,* 2004). Sanders (2005) pointed out that there is lack of research on botanic garden education which, in a more general lack of reflective commentary on botanic garden education, has a major impact on the 'visibility of botanic gardens in educational arenas'. Based on Rickinson *et al.*'s (2004) suggestion in relation to out of school and in school learning experiences, Sanders (2005, p. 291) at the end of her doctoral thesis proposed the following questions for further research: 'to what extent is botanic garden learning supporting or challenging the learning pupils undertake in the classroom? How is this learning integrated into pupils' indoor learning and vice versa?'

Botanic gardens, as settings of outdoor education which offer a variety of learning opportunities, have their own role to play in this changing educational context in the UK. The relationships developed between schools and botanic gardens provide appropriate grounds to investigate the phenomenon of interorganisational collaborations, and the

experiences offered to pupils including how out-of-school learning can support within-the-school learning and vice versa. A focus on environmental learning, which is defined broadly as 'learning which accrues, or is derived, from an engagement with the environment or with environmental ideas', is inevitable within that context (Scott & Gough, 2003, p.14). Rickinson's (2001) review pointed out that primary pupils' learning in environmental education is under-researched in comparison to secondary students' learning, and that contributed to my decision to narrow down on exploring gardens' collaboration with primary schools.

The proposed research, aims to address research gaps and also develop a theoretical framework which will improve the understanding of outdoor education settings' and schools' collaborations. My research aims to contribute to educational practice as well. Given the fact that teachers and head teachers have responsibilities for the school curriculum and pupils' achievements, and the great pressure that school inspection puts on their educational role, the current research is a good opportunity for schools to reflect and get an insight into the ways they collaborate with outdoor education settings, the benefits from the collaboration and potential shortfalls, and also to gain evidence of the contribution to pupils' learning.

1.3. The research settings

Within the UK context, I decided to conduct my research at Wakehurst Place in West Sussex and the local primary schools. One of the main reasons for selecting this garden is that it is managed and funded by Royal Botanic Gardens, Kew which has a long history and significance as a botanical garden, both in Britain and worldwide. It is likely, that other botanic gardens around the world will be already familiar with the context of my research, and thus my findings might be readily interpreted, and colleagues might possibly find concepts and suggestions from my findings useful for their own practice which they may adopt and adapt to their own unique conditions. Another significant determinant for selecting Wakehurst Place is its well established educational programme, continuously developed over the years. One thing to note is that teachers who visit the gardens with their pupils have the opportunity to plan activities with the gardens' educational staff in order to make the most of their visit. This kind of operating can affect the programme's quality, the development of more close relationships, and different kinds of collaborations between the garden and the schools, all of which are crucial aspects of

the proposed research. The three primary schools that were part of this research were purposively selected following suggestions by the head of the Wakehurst learning program who identified that Wakehurst has a more long term and close collaboration with certain schools. More details on how the particular settings and the collaborations that were central to this study were identified will be given in the methodology chapter. However, it is important to clarify at this point the difference between the research settings, and the research cases under investigation. In particular, the research settings (the places where the events I investigated took place) are Wakehurst Place, and three local schools (detailed description of the settings are provided in Appendices 3.3. and 3.4.). Moreover, my research examines three cases as there are three sets of collaboration. Each case includes the collaboration of Wakehurst with an individual school. Where appropriate, the analysis narrows down from the organisational level (i.e. botanic garden – school) to the individual or personal level (i.e. educator – teacher). The cases will be described in detail in Chapter 5, and data will be analysed in Chapters 6 to 8.

1.4. Research Questions

My research questions arose both from gaps in the research literature as discussed above (e.g. a lack of research on the process of the collaboration rather than the learning outcomes in outdoor and environmental education, a lack of research on environmental learning, and the relationship of in school and out of school learning), and from recent policy developments (i.e. the renewed interest in outdoor education within the UK educational system, and the potential that collaborations between schools and outdoor education settings may have for enabling the schools to overcome barriers to the provision of outdoor education). In all this, it is important that schools should not be regarded as 'islands' but as part of the main (Scott, 2010)[3], and their role in providing education for young people should be seen in connection to what they can achieve within their local communities and in collaboration with other organisations. Schools' collaborations with other agencies/organisations, families and community in general, have been often suggested as a way to achieve school reform and improve students' learning (e.g. Epstein, 1995; Kirschenbaum & Reagan, 2001; Patterson & Carline, 2006) and current educational policy also recommend that the 21st century school should be

[3] as Donne (1624) suggests: 'No man is an island entire of itself; every man is a piece of the continent, a part of the main'. John Donne; Meditation XVII from Devotions Upon Emergent Occasions http://isu.indstate.edu/ilnprof/ENG451/ISLAND/text.html

outward focused, and look towards working in partnerships and collaborations with other schools and other services (DCSF, 2010). My research questions are:

RQ1 What factors militate in favour of successful collaboration between botanic gardens and schools?

Here, 'factors' include institutional and individual arrangements and understandings. Although the analysis started from the organisational level, where necessary it narrowed down to individual interactions. 'Successful' means leading to positive and valued outcomes (primarily but not exclusively focused around learning), scope for further work together, and in relation to the satisfaction that participants express about the collaboration itself or else the 'climate' in which it takes place. 'Collaboration' implies common goals, joint working, playing to strengths, and medium- rather than short-term planning. Botanic gardens – schools collaboration is not regarded as a set way of working together, and the different ways that the organisations work together in a variety of projects will be explored. Through the research I aimed to develop a framework that could be used to critically examine and analyse students' environmental learning experiences, which is the focus of the next research question. This approach did not presuppose that successful collaborations lead to better learning, but the intention was to use the framework to investigate what kind of environmental learning experiences were created, and how they were perceived, with a focus on the potential links between environmental learning in school and in the gardens.

RQ2 How are pupils' environmental learning experiences in botanic gardens and local schools shaped through their collaboration?

Here, environmental learning is regarded broadly as the 'learning which accrues, or is derived, from an engagement with the environment or with environmental ideas' (Scott & Gough, 2003, p.14). This view is employed as it encompasses the breadth and complexity of both experience and possible learning, and enables a look at whether and how students' learning in the gardens is linked with learning at school. Whether students can identify links between their learning across settings will be explored, as will how the organisations' collaboration can enable creating such links. Participants' perceptions of experiences provided in an outdoor education setting such as a botanic garden will be examined, acknowledging that experience can be understood in different ways e.g. interactive experience, embodied experience, experience as praxis (see section 3.7 for an exploration of the different conceptualisations of experience). 'Shaped through' implies that the experiences are influenced by how the botanic gardens and schools collaborate having their own organisational aims and needs, and also by how students perceive their

experiences. The implications of the findings for environmental education in both botanic gardens and more widely will be drawn out.

A case study methodology will be used because it will enable an in-depth investigation of the complexity of the collaborations between Wakehurst Place and the schools, and employing ethnographic methods allows me to investigate the collaborations as they happen, with activities included as they emerge in the field. In addition, the ethnographic case study provides a flexible research design that enables me to become a participant observer of students' environmental learning experiences in the school and in the gardens, and enabling me to ask all the participants involved about their experiences and learning. More detailed explanation on the ability of the selected methodology to answer my research questions is provided in section 4.2, and limitations of the methodological choices will be also discussed in section 4.3.3.

1.5. Overview of the thesis

Having set the background of my research and the research questions in the introduction, I will continue with an extensive literature review in Chapters 2 and 3. Chapter 2 is an historical overview of how botanic gardens have developed, how their role changed according to societal changes, and how the need to develop their educational role emerged. The evolution of the educational role is then examined in connection with parallel developments in outdoor, environmental and sustainability education with a particular focus on the UK, as this is where the research is situated. The main points of that chapter could be summarised as the move of botanic gardens from serving imperialistic interests and development, to a conservation role which, especially from the 1980s, supports education provided in the gardens with a focus on environmental education, and on sustainability education more recently.

Chapter 3 continues with a review of research into, and theories on, interorganisational collaboration because the focus of my research is on botanic gardens and school collaborations, and on environmental learning experiences that these can give rise to. A number of factors are suggested in the literature that contribute to the success of such collaborations, some of which are also identified in my research, and are presented in the data analysis chapters. The next part of the chapter examines research on the informal

education sector, including environmental and sustainability education, and botanic garden education in relation to learning opportunities and links with school learning. While the first part of the literature review pictures the context that has shaped the activities of botanic gardens education, including the Wakehurst Place learning programme, the second shows what research has to say about the relationship of informal and formal education sectors, and points to gaps that my research addresses, such as conceptualising collaborations in environmental and sustainability education, and how in-class and in-school learning can be linked to outdoor learning. Chapter 3 also discusses different ways of conceptualising experience, and concludes with a review of theories of learning which can provide meaningful explanations for experiences in outdoor education settings such as botanic gardens.

Chapter 4 addresses methodological issues. My epistemological and ontological choices are presented, and the reasons why an ethnographic case study was employed to investigate the specific research questions are explained. By describing my fieldwork experience, I set out how the principles of both case study and ethnography methodology were applied, what specific methods (the tools) were used to collect data (including focus group and individuals interviews, participant observation, collecting artifacts, and visual documentation), and how I ensured that this process was rigorous. Then, my data analysis methods are explicated: mainly thematic analysis and the constant comparative method[4]. This part of the chapter attempts to shed light on the process of data analysis to ensure transparency and allow assessment of the quality of my research as Punch (2005) suggests. An example of data analysis is presented, with a justification of how the stories, products of the data analysis, can answer the research questions. The chapter also addresses how I establish that both data collection and analysis methods are rigorous, and deals with generalisability issues.

Chapter 5 gives a description of the cases, i.e. the story of each school's collaboration with Wakehurst. The stories comprise two parts, starting with the history of the collaboration, and then explaining the collaborative activities that I documented during my fieldwork. These descriptions set out to clarify for the reader what the collaboration of Wakehurst with local schools means, and, more importantly, they touch upon issues that

[4] The constant comparative method is at the core of grounded theory approach developed by Glaser & Strauss (1967). In the work of Glaser & Strauss (1967) constant comparison is important in developing a theory that is grounded in the data. Glaser (1965, p.439) describes the constant comparative method in four stages: 'i) comparing incidents applicable to each category (coding each incident in the data in as many categories of analysis as possible), ii) integrating categories and their properties, iii) delimiting the theory and iv) writing the theory'.

will be the cornerstones of my data analysis chapters, i.e. how the history of collaboration affects and can determine its future, the importance of building individual relationships between members of the organisations, and the ways that the gardens and schools have come to depend on each other. This chapter also makes clear that, although my case studies are the three separate collaborations between Wakehurst and the three primary schools, when appropriate, a within-case analysis will focus down from looking at the organisations to examine individual human interactions.

Chapter 6 sets out how the history of each collaboration influences the outcomes and processes of collaboration in the present, and the learning opportunities that emerging. The participants, owing to their previous experiences in the gardens, hold expectations about learning opportunities and the collaboration process. In particular, pupils' views of the collaboration are examined, including whether and how pupils' engagement in environmental learning experiences was achieved. In addition, the kinds of perspectives that research participants held in respect of environmental learning experiences in the gardens is explored. Arguing that the history of collaboration is a factor that contributes to the success of the collaboration, the chapter concludes with a model which explains how Wakehurst Place and local school collaborations work, shows the patterns that can be identified (e.g. how stable relationships between the organisations are formed, particularly when trust and expectations based on the history of collaboration guarantee future collaborations), and charts how changes in such collaboration may occur. Whilst the history of collaboration is the main factor around which the chapter is structured, other factors that influence collaborations, and are identified in the literature, are also discussed.

Chapter 7 explains how the development of relationships between people who work in the gardens and schools contribute to the success of the collaborations. These relationships include professional relationships, for example between educators and teachers, and informal links when members of one organisation have good personal links with the other organisation, thus preparing the ground, somewhat, for collaboration. This part of the thesis looks at collaboration as a 'personal thing' which is a theme that emerged strongly during my fieldwork. Other factors influencing the collaboration are also discussed. The chapter concludes with a model depicting collaboration as a continuum starting with organisational links and finishing with individual relationships, setting out the characteristics that each stage of the collaboration has. Additionally, how individual relationships influence pupils' environmental learning experiences is also examined.

Chapter 8 explores interdependency as a factor that contributes not only to the success of collaboration, but also as a fundamental ingredient of it, as it gives reason for the interaction between the organisations to take place. After looking at how schools and the gardens have come to depend on each other, issues that arise when interdependency weakens with a negative impact on the collaboration are explored. Having developed an understanding of interdependency, and how it may influence pupils' environmental learning experiences, I then use the factors that influence the collaboration as lenses to view whether, and how, they may contribute to creating links between learning experiences in school and in the gardens. I also focus, from teachers', educators' and pupils' perspectives, on how environmental issues are addressed as part of environmental learning experiences. I explore how barriers to addressing environmental issues can be overcome by creating links between learning in the gardens and learning in school. Such environmental learning experiences are not assumed to have a single, unified meaning for all participants; rather, different conceptualisations of experience are identified and explored.

Chapter 9, the final chapter, summarises the main arguments of the thesis and its contributions to knowledge with regard to the research questions. Reflections upon the research process are presented, and my final point regards implications for policy, research and practice in the fields of outdoor and environmental education.

1.6. Findings

My research has identified three main factors that influence the success of botanic gardens – school collaborations: the history of their collaboration, the development of individuals' relationships, and interdependency.

Through the *Collaboration Double Loop*[5] model, I explain that success of collaboration is based on the positive history of interorganisational collaboration that creates trust and expectations amongst participants for their future endeavours. The transition from a first loop, which focuses at an organisational level, to a second loop, which focuses on individuals, requires the teacher and the educator 'matching' with each other. The

[5] Both terms are coined to entitle the two models that result from the data analysis.

'match' between the educator and the teacher is further elaborated and explained through the *Individual Collaboration Continuum*[5] which attributes success of collaboration to developing individual relationships. The continuum represents, at one end, interactions between teachers and educators that do not result in personal relationships. Despite this, they will continue to organise visits to the gardens because of their organisations' commitments. At the other end of the continuum, teachers find an educator with whom they 'match', i.e. they share common characteristics, interests, and attitudes such as creativity, enthusiasm, love for nature, love for the arts, and hold the same teaching and learning theories and values, and when they organise pupil visits they create innovative high quality learning experiences which tend to lead to successful collaboration that is stable and which evolves over time.

Interdependency is the cornerstone of collaboration as botanic gardens and schools, when they collaborate, become dependent on each other for a number of reasons. For example, schools use botanic gardens because they can meet their curriculum requirements through tailor-made activities. These involve both educators, who have appropriate expertise, and high quality facilities, to provide outdoor experiences for the pupils. The gardens collaborate with schools as they provide an audience for their messages in relation to environmental issues and plant conservation. Additionally, the gardens, by meeting schools' needs, ensure high numbers of school visits which give rise to increases in general public visits, which is essential evidence of the value of the gardens' work for securing their future funding. It is important that the environmental learning experiences offered in the gardens complement but do not duplicate pupils' experiences at school. Where this happens, interdependency is stronger, and participants are more enthusiastic about the collaboration. If experiences in the gardens take place indoors, and could be equally well implemented at school by the teacher, then dissatisfaction may arise, and interdependency weaken. The analysis that showed the importance of these three factors has also identified other factors that influence botanic gardens – school collaborations. These include: location/distance between the settings, the link between education and conservation policies in the botanic gardens, mutual respect and understanding, informal links between the organisations, commitment to the collaboration, learning at organisational and individual levels, flexibility and the dynamic nature of the collaboration, and development of clear roles and responsibilities. All these issues are found in the literature.

My research has also looked at how botanic gardens – school collaborations shape pupils' environmental learning experiences in both settings. The findings showed that when the

factors that contribute to the success of the collaboration are combined, constructive links between pupils' in-school and in-gardens environmental learning experiences may be achieved. I will briefly exemplify how the main factors contribute to create links between experiences across settings. First, to enhance its interdependency, Wakehurst Place has developed its learning programme according to national curriculum requirements in order to meet the needs of the schools. Second, since there is a history of collaboration between the local schools and the gardens, the teachers know what to expect, and have come to trust the collaboration. With a positive attitude, and also knowing how to collaborate, teachers discuss their school work with the educators, and agree how best this can be combined with garden activities. Third, when specific educators and teachers develop personal relationships based on their common characteristics, interests and values, their interaction and enthusiasm result in creative gardens activities that are very well linked with school work. In those cases, data accruing from my research show that pupils identify the links between their environmental learning experiences in the gardens and at school, and their learning is reinforced because of this.

The findings also illustrate how pupils' environmental learning experience can be conceptualised in different ways. An *interactive* perspective to the experience is implied when the emphasis is on creating links between pupils' environmental learning experience in the gardens and in school; a *neo-experiential* perspective is implied when experience is regarded as instrumental and technical, and tightly bounded in time and space, where its main aim is to fulfil curriculum content; and an *embodied* perspective to experience is implied when the emphasis is on pupils having a direct experience in the gardens environment, not necessarily connected to what precedes or follows that experience. Moreover, issues may arise when participants hold different perspectives about the environmental learning experiences in the gardens which means that their expectations may not all be fulfilled. For example, teachers and/or educators may have planned the pupils' environmental learning experiences based on a *neo-experiential* perspective while the pupils may have an expectation of an *embodied* perspective for their environmental learning experiences in the gardens. The experience as *praxis* approach which considers experience in a more political sense, as a means for emancipation, was rather marginalised. That was especially evident when I looked at whether and how environmental issues were addressed in pupils' environmental learning experience.

While many of the activities offered through the gardens – school collaborations mainly focused on pupils' understanding of the environment, and plants in particular, others focused on encouraging pupils' environmentally friendly practices, with only a few

activities focused on developing pupils' critical thinking about environmental issues. The findings suggested a number of reasons for not including environmental issues in pupils' environmental learning experiences. These included a lack of time within the school visits, educators' concern about becoming prescriptive, an over-emphasis on fulfilling national curriculum requirements, rather than examining environmental issues (i.e. the gardens' mission), and teachers' and educators' tendencies to overlook environmental issues that are included in the national curriculum. Arguing that the pupils' merge the learning they acquire from different sources into a whole unit, and taking into account that individuals' behaviours are influenced by a variety of factors, it is suggested that, during the collaboration, teachers and educators need to encourage pupils' critical thinking about environmental issues through their experiences in the gardens and at school

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Chapter 1 presented botanic gardens as outdoor education centres whose role has significance within the renewed interest of the English educational system in outdoor education. Botanic gardens' role in plant conservation is also significant considering current and future challenges related to climate change. Taking into account overlooked areas of research, such as the collaboration between schools and outdoor education settings, the relationship of indoor and outdoor learning, and the nature of learning in environmental education, my research focuses on the factors that militate in favour of successful gardens – school collaborations, the links between in-school and in-the-gardens experiences, and how the gardens – school collaborations shape the pupils' environmental education experiences. After presenting my research questions, I gave an overview of my thesis, summarising what each chapter entails. I then focused on my research findings which are structured into three data analysis chapters, based on the factors contributing to the success of the gardens – school collaboration: *history of collaboration*, *individual collaboration* and *interdependency*. The next two chapters, which comprise the literature review, will discuss in detail the contexts in which my research is located, including policy, practice and research, from the fields of botanic garden education, environmental/sustainability education, and outdoor education.

Chapter 2. Literature review: locating policy and practice contexts

⌘ Chapter Introduction

In what contexts is botanic garden education located? That was the initial question which arose in the beginning of the search in the literature. It is important to know under what circumstances botanic garden education developed and what kind of influences it received over the years. A prime focus on the UK context seems reasonable as my research is based at Wakehurst Place, Kew Gardens located in the UK. Since my research focuses on collaborations of botanic gardens with schools it seems logical to follow the existing evidence of educational activities in botanic gardens in relation to changes that botanic gardens have undergone over time, changes in their roles and functions, and also how school education, outdoor education, and environmental education have developed, up to the recent emergence of Education for Sustainable Development (ESD).

2.1. The rise and evolution of botanic gardens

The modern European botanic gardens' origins can be attributed to the physic gardens of monasteries where herbalists grew plants for their medicinal properties (Sanders, 2005), and also to the gardens attached to the medical schools of the Renaissance universities starting in northern Italy and southern France in the 16th century, and spreading north to all the important centres of learning in Europe (Brockway, 1979). One of the major functions of these early institutions was to maintain a scientific collection of plants for the instruction of students of medicine (Gilberthorpe, 1987). In Britain, the first botanic garden was a physic garden, established in 1621 as part of the University of Oxford Faculty of medicine (Desmond, 1979). One of the worldwide famous botanic gardens, the Royal Botanic Gardens of Kew, was established in 1759 in London and was devoted to medicinal plantings initially. Scientific research expanded, and Kew became essential to developing the British Empire, supplying seeds, crops and horticultural advice to the colonies (Royal Botanic Gardens, Kew, www.kew.org). The function of physic gardens ceased to be exclusively medical as they began to grow some of the new and exotic plants brought back to Europe by travelers. Many botanic gardens were directly involved in the

expansion of the British Empire through the transportation of economic plants such as tea, rubber, quinine and coffee (Sanders, 2005). In the 17th and 18th centuries British botanic gardens were established in many parts of the country, founded by Universities, Horticultural societies, local authorities, or even by notable gardeners. The economic potential of plants absorbed much of the attention of the major botanic gardens in the 19th century (Desmond, 1979). A variety of types of botanic gardens in the UK can be identified, from those attached to a higher education institution e.g. university departments of Botany, Agriculture, and Horticulture, to public botanic gardens administered by local authorities, or botanic gardens owned by private societies or individuals (Gilberthorpe, 1987).

In the 20th century changes such as the decay of British Empire (Pickering, 1992), governments and other organisations taking over the world-wide distribution of crop plants, the increase in private gardens, the advent of the National Trust providing displays of living plants for amenity purposes (Thompson, 1972), the substitution of plant-based drugs by synthetics, the decline of botany in Medical studies, a decline in student numbers in Botany departments (Pickering, 1992) compelled botanic gardens to refocus their functions; the most urging reason to do so, was the financial constraints that many of them faced from their very beginning. In the second half of the 20th century human activities brought dramatic environmental impacts to the earth and because of the overuse of natural resources and destruction of the environment, much of the fauna and flora are threatened with extinction (Chang, 2001). Issues such as ecosystems or biodiversity conservation emerged, and environmental policy as a consequence appeared in the national and international policy agenda. Botanic gardens within these developments found a new niche, and the motivation to adjust their functions and gain back their profile by contributing to the conservation of plant genetic resources (Haywood, 1987).

One of the important environmental policy initiatives during the 1980s was the World Conservation strategy (WWF, UNEP, IUCN, 1980) which stressed the significance of resource conservation through sustainable development and the idea that resource conservation and development are inter-related (Palmer, 1998). In 1987 the World Conservation Strategy was reinforced by the report 'Our Common Future' (Brundtland report) which was a statement on global agenda to reconcile environment with development and which brought into the foreground the term sustainable development defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987, p.54). Within these developments, plant conservation was acknowledged as urgent because of the rising rate

of plants facing extinction as a result of habitat destruction, the unsustainable harvesting of wild growing plants, the decline of the genetic diversity of plant species which produce the majority of people's food, and because of the unknown potential value of many plants to the humanity which have not been researched or identified yet (IUCN, 1987).

The founding of Botanic Gardens Conservation International (BGCI) in 1987 brought together gardens with different backgrounds, aims, and functions, promoting them as institutions that could encourage and also develop further the implementation of international movements related to environmental protection. Nowadays the organisation represents globally the main force for the protection of plant diversity and its work has developed in networking people and botanic gardens worldwide, securing plant diversity by being involved in conservation projects, working in partnership with other organisations for the protection of threatened species and influencing decision making and policy (BGCI, www.bgci.org).

In 1989, the publication of The Botanic Gardens Conservation Strategy provided a shared rationale and framework for botanic gardens worldwide, assisting the development of many conservation programmes, encouraging the creation of new botanic gardens or even supporting the redevelopment of older ones (Wyse Jackson & Sutherland, 2000). It can be said that the arguments for conservation come mainly from an anthropocentric view of the environment with plants regarded as valuable to conserve as long as they are useful for human development.

In 1992, as a result of the Earth Summit in Rio de Janeiro (UNCED, 1992), several important policy documents were developed representing the beginning of a long process of interpreting, and implementing recommendations and agreements designed to change the future of the planet. Agenda 21 was a major action programme setting out what nations should do to achieve sustainable development, and the Convention on Biological Diversity (CBD) was the recognition of the negative effects of the loss of biodiversity on the quality of life and on the survival of life on the planet. In 2000, the BGCI publication of the International Agenda for Botanic Gardens in Conservation provided a framework for botanic gardens worldwide to review their operation, evaluate their conservation policies and practices and develop global partnerships so that they could contribute to the new international policies (Wyse Jackson & Sutherland, 2000).

In 2002, the World Summit on Sustainable Development (WSSD) in Johannesburg, acknowledged that progress towards achieving sustainable development was slow and

sought to overcome obstacles by reaffirming its commitment to the full implementation of Agenda 21 and the Millennium Development Goals – a set of eight targets aimed at reducing poverty and promoting sustainable development (UN, 2002). Complementary to the WSSD was the development of the Global Strategy for Plant conservation in 2002 (the first Strategy under the CBD), whose ultimate objective is to halt the current and continuing loss of plant diversity by achieving 16 targets by 2010. BGCI had a major influence on the development of the strategy (CBD, UNEP & BGCI, 2003) whose targets have direct relevance for botanic gardens. Besides these issues a new global international challenge had to be faced, climate change, that was not originally a major element of the Global Strategy. The publication of the Intergovernmental Panel of Climate Change (IPCC) Climate Change, 2007 report (IPCC, 2007) brought to the attention of the world the scientific understanding of the present changes in the climate. The most recent models based on a temperature rise of 2-3ºC over the next 100 years, suggest that up to 50% of the 400,000 or so higher plant species will be threatened with extinction (Bramwell, 2007). Accordingly, the work of botanic gardens is now directed to the impact of climate change on plants and to the challenges for plant conservation, as the recent BGCI report 'Plants and climate change: which future?' (Hawkins *et al.*, 2008) indicates.

2.2. Botanic gardens education developments

The educational function of botanic gardens existed from the very beginning but initially it was restricted to higher education and specifically to instruction about, and study of, the medicinal uses of plants for doctors and medical students (Desmond, 1979), and later on, as the British Empire expanded, the educational function encompassed the training of botany students who examined the plants from a more scientific rather than medical point of view (Gilberthorpe, 1987). The role of botanic gardens in educating the wider public was rather restricted especially as many gardens were not even accessible to the general public (Dickson, 1935) on the grounds that the conditions needed for research projects do not always combine easily with the presence of visitors (Gilberthorpe, 1987).

Sanders (2005) pointed out that the botanic gardens educational history is not coherent or well documented. Narrowing down to the relationship of botanic gardens with schools in the British context, the reader should bear in mind that national compulsory education in Britain was only established in 1880 (Gillard, 2007). The collaboration of botanic gardens with schools is related to the way that botanic gardens developed inclusive or exclusive

policies towards children as learners. For example, Oxford Botanic Gardens as Gunther (1912, pp. 173, 175) notes had strong rules about children: 'General orders have been given to exclude nursery maids and children from the premises' (1835) and 'Children are not admitted unless in the charge of a responsible person' (1887). There is little documentation of schools collaborating with botanic gardens through off-site collaborations such as those of Dr. Lilian Clarke (1922) of the Chelsea Physic Garden, London who did botany teaching in London schools as part of her work in the gardens, with local schools preparing to plant specimens in the Physic Garden (Minter, 2000), or the provision of plant materials to schools by Chelsea Physic gardens and the Royal Botanic Gardens, Kew in the early 20th century (Sanders, 2005). Another example is the provision of training courses for secondary school teachers in botany-related subjects at Kew Gardens (Kew, 1926). Although there is some evidence of school visits to gardens and their museum exhibitions, there is no evidence of special activities organised for the school groups (Kew, 1930).

At the same period (first half of 20th century) there are some notable examples of well developed programmes of botanic garden education, internationally. For example, Brooklyn Botanic Gardens, (opened to the public in 1910) from the early years of its establishment focused on developing an educational programme (Avery, 1971) initiated by Ellen Eddy Shaw (1927, p. 103) who pointed out that 'most botanic gardens in the world offer nothing in specially planned work for children and teachers'. A wide range of activities were offered to young people which included classes for school visits, classes for children on Saturdays and during holidays, and after school, and classes for teachers. The programmes offered for schools included lectures, lessons and field trips on nature study, geography and gardening. Attention was given to integrating the experience in the gardens with school work and also regular weekly activities in the gardens' grounds were offered for those local schools that could most readily access the gardens (Shaw, 1927).

After WWII, botanic garden education still did not go through any great development. Avery (1957, p. 271) encouraged botanic gardens and Botany departments in colleges to 'team up' to make 'botanic education not only popular but available to everybody'. He argued that botanic gardens like public libraries are needed by the wide public but he pictured botanic gardens as an old-fashioned museum disaffected from the public. Thompson in 1972 pointed out that the educational work of botanic gardens attached to university Botany departments was confined within the University boundaries and highlighted the educational potential of botanic gardens which remained unexploited at the time.

Gradually the educational role of botanic gardens started raising its profile through its acknowledgement in major policy documents and in relation to the botanic gardens conservation strategy. For example the World Conservation Strategy in 1980 and the International Conference on Botanic Gardens (1985) (Wyse Jackson & Sutherland, 2000) recognised the vital importance of community understanding and awareness in achieving conservation of biological resources. It called on governments, conservation organisations, schools and colleges, industry and concerned people to assist educational programmes in botanic gardens through funding, moral support and direct involvement.

Heywood (1987, p. 16) pointed out that the educational role of botanic gardens was slow to develop and was mainly a phenomenon of the last few decades. In the past, he claimed, the general public visiting the gardens viewed the living plant collections and any other exhibits uncritically on the whole and the gardens 'were making few concessions to public education other than the provision of labels with minimal information (which were probably aimed more at students than at the general public)'.

BGCI since its establishment in 1987 has contributed decisively to the coherent development of the botanic gardens education worldwide which in the past has been relying upon enlightened passionate individuals. The educational work of BGCI ranges from the publication of the educational magazine Roots, educational newsletters, organising of international congresses on education in botanic gardens, disseminating examples of good practice, developing educational networking between botanic gardens, developing educational resources, and defining guidelines that determine botanic garden education activity. The development of BGCI policy follows international developments on issues related to conservation and the protection of the environment but also relevant developments on the scene of informal and formal educational systems which are all interrelated (see BGCI, http://www.bgci.org/education/). Within the UK context, the Botanic Gardens Education Network (BGEN) is another organisation which targets educators from botanic gardens and other centres of environmental education, and whose mission is to 'support inspirational learning about plants and their importance' (BGEN, www.bgen.org.uk).

As a response to the developments in environmental education (explained in detail in 2.4.) and also to CBD article 13, which urged 'Providing public education and developing environmental awareness, including programmes to promote public understanding of biodiversity, its importance and loss' (Wyse Jackson & Sutherland, 2000) BGCI

published in 1994 'Environmental Education in botanic gardens guidelines for developing individual strategies'. The guidelines offer a general framework to gardens to review or develop their educational role by setting up an environmental education programme in line with international strategies. The framework included issues such as targeting specific audiences, making best use of the facilities or allocating new ones, adopting suitable educational approaches, providing qualified educational staff, raising funding for the programmes, and collaborating with other organisations with similar interests. The guidelines stress the need for a whole garden approach where education will be included in the gardens' mission statement. Also, by adopting environmental education, there is a focus on behavioural change and individuals' participation in conservation initiatives (Willison & Green, 1994).

In the following years after the publication of environmental education guidelines, BGCI acknowledged the importance of Education for Sustainability (EfS) which had been promoted in Agenda 21 (UNCED, 1992), and encouraged botanic gardens to engage in EfS developing people's understanding of sustainability problems and new forms of sustainable management, but also to challenge the dominant ways of thinking and behaving which have an impact in the global situation (Willison, 1997). Mixed methods research (Willison, 1997) attempted to explore how EfS was implemented in 16 gardens worldwide, and concluded that the majority of botanic gardens implemented a weak form of EfS. Constrains that the educators identified included lack of funding, lack of time, lack of staff resources and lack of support by senior management. The research pointed out that the most important constraint was the perception of EfS held by education officers and staff and called for 'a radical shift in staff perceptions, values and attitudes' (ibid, p. 22).

Furthermore, the International Agenda for Botanic Gardens in Conservation (Wyse Jackson & Sutherland, 2000) taking on board the focus of CBD on the importance of public education and awareness in promoting sustainable development, urged botanic gardens to develop as centres for environmental education and sustainability with appropriate resources allocated, a qualified educational staff and a designated education section in the gardens. Also, in the Global Strategy for Plant Conservation, target 14 stresses 'the importance of plant diversity and the need for its conservation incorporated into communication, educational and public awareness programmes' (BGCI, 2002, p.10). In 2005, the United Nations declared the beginning of the Decade of Education for Sustainable Development (2005-2014) which aims 'to integrate the principles, values, and practices of sustainable development into all aspects of education and learning'

(UNESCO, www.unesco.org) (see also 2.1.2). ESD has been growing in the attention of botanic gardens through BGCI's publications, the Roots magazine, and since 1996 in international conferences on botanic garden education when it was included as a major theme. In 2006, BGCI published 'Education for Sustainable Development: Guidelines for Action in Botanic Gardens' (Willison, 2006) which stressed that botanic gardens have been important centres for environmental education but that, in order to address environmental and development issues of the 21st century, it is necessary to develop an ESD strategy embracing a more holistic paradigm, incorporating the ecological, economic, social, cultural and personal dimensions of sustainable development and their inter-relations. The guidelines provide a rational for botanic gardens to be involved in ESD, to contribute to the United Nations Decade of ESD, and to offer guidance to setting up ESD programmes. Interestingly, the guidelines do not only focus on the education work of the gardens, but highlight the need for a holistic sustainability approach to all the sectors of the gardens – the garden as a whole as a model for sustainability. ESD in the document,

> is not regarded as an agreed set of ideas which educators can tack on to existing thinking and practice to allow them to say we are doing sustainability – it is a form of empowerment that generally requires a reorientation of the way we think (Willison, 2006, p. 7).

Aiming to investigate the status of education in botanic gardens, BGCI conducted a survey in 2006 with a sample of 120 gardens worldwide. According to the survey, 26% of the gardens that regarded education as important did not have a budget specifically for education which indicates that although gardens recognise that education is necessary to achieve the protection of plant diversity, they are not always willing to invest resources in its provision. Also the survey found that apart from two gardens with very large education departments the rest of the gardens have on average two full-time staff working on education of whom typically only one will have education qualifications, and only one third of the part time educational staff working for the education department have relevant qualifications. In terms of the audiences that botanic gardens education is targeting, school children both from primary and secondary education and also university students represent the most common audience followed by families, tourists and community groups. The most popular themes of the programmes involve plant diversity and conservation, followed by ethnobotany, plant science, and endangered species. Environmental appreciation is addressed in 57% of the gardens, climate change by 34% of the gardens while themes related to social justice and sustainability are at the bottom of the list, as the least addressed in botanic garden programmes. The report highlighted that

while climate change is at the top of the political agenda, only one third of the gardens are addressing the issue within their educational programmes. And while it is acknowledged that plant diversity conservation can succeed through behavioural change to a more sustainable way of living, botanic gardens 'do not seem to be leading the way on facilitating the changes needed' (Kneebone & Willison, 2007, p. 8). The report concluded with practical recommendations to botanic gardens but lacked a critical view on educational provision especially as it failed to notice that even if there is some kind of organized educational provision there is no evidence of the effects that has on learners. There is a need for this research to be complemented by qualitative investigation that will point out crucial points related to environmental/sustainability concepts and practices of both educators and learners.

2.3. Outdoor education developments in the UK

As botanic garden-school collaborations provide outdoor education, it seems important to refer to how outdoor education has developed in the UK. First of all, it is useful to discern two main focuses in the outdoor education provision throughout its history. One focus concerns the study of nature including school gardening and field studies, and the other concerns outdoor pursuits including adventure activities (Cooper, 1999).

The 'study of nature' movement, whose origins can be traced back to Victorian and Edwardian England, had been introduced within school education and was related to the society's fascination with flora and fauna, both domestic and exotic (Rickinson *et al.*, 2004). In 1905, the study of nature with reference to the school surroundings was required through a Code of Regulations for the public elementary schools (Dillon *et al.*, 2003). In the late nineteenth century, school journeys were introduced, an idea imported from the German education system including excursions into rural areas related to subjects such as geography, history, biology (Rickinson *et al.*, 2004) and in the first half of the 20th century the School Journey Association was established to promote learning beyond the classroom (Dillon *et al.*, 2003). Alongside nature study in schools, school gardening also developed a more prominent role and in 1895 first became eligible for government funding. School gardening was also related to rural studies which was a school subject originated before WWI. The School Nature Study Union (SNSU) founded in 1903 established a gardening section and during WWI encouraged the use of school

gardens for growing vegetables for food self-sufficiency as part of the war effort leading to an increase in the number of school gardens (Bramwell, 1961).

The second wider focus of outdoor education throughout its history in formal education is related to outdoor activities including mountaineering, climbing, orienteering and canoeing. Outdoor activities with that kind of focus may be traced back to physical education provision in the 19th century (Mannion *et al.*, 2006), and later on in the 1920s with the publishing of 'Camping in Education' by the Board of Education (Rickinson *et al.*, 2004). A great influence on the adventure approach of outdoor education was the Outward Bound movement initiated by the German, Kurt Hahn, who established outdoor education schools in the UK during the 1940s, promoting outdoor adventure education using challenging situations to develop personal qualities such as self-reliance and leadership (Cooper, 1999). The growth of interest in outdoor activities accelerated from the 1950s (Mannion *et al.*, 2006). The 1944 Education Act encouraged provision of outdoor activities through youth and adult education focusing on character building and healthy living but this is also associated with war and the need to make young people 'fit for war' and to serve the British Empire (Cook, 1999).

During WWII school gardens continued to increase in number, and were used for the systematic and long term study of the natural world, or focused on the production of food (Jenkins & Swinnerton, 1998). In the same period, fieldwork had a breakthrough with the establishment of a network of centres in England and Wales by the Field Studies Council, founded in 1943, aiming to bring environmental understanding to people through first hand experiences (Rickinson *et al.*, 2004). The Ministry of Education in 1958 published 'Schools and the Countryside' highlighting the importance of farm studies for the appreciation of the vital role of farming and encouraged schools to organize farm visits (Dillon *et al.*, 2003). The study of nature continued to expand through the establishment of 17 educational centres and since the 1960s many local education authorities have opened field study centres where school children can learn about and through the environment (Cooper, 1999). In the meanwhile, the focus of outdoor adventure activities, after its main development with the Outward Bound movement in the 1950s, shifted to improving health, stimulating learning and reducing the incidence of juvenile delinquency (Cook, 1999).

Rural studies became an established subject in the curriculum (Carson & Colton, 1962) which by the 1960s included gardening, nature study, agriculture and rural craft, but since industrial work was increasing and rural labour was in decline, rural studies which were

considered as a practical subject for developing vocational skills, mainly in secondary education and for children with no high academic achievements, gradually lost their importance (Carson & Colton, 1962). As a result they disappeared from the curriculum and nowadays they can be traced within subjects such as science or in extra curricular activities such as the gardening club. The urban studies movement in Britain was highlighted by the Child in the City publication (Ward, 1978) which promoted the use of cities as learning environments where children can be involved in environmental education but also participate in decision making related to town planning.

Until the 1970s outdoor education was flourishing in terms of educational popularity, support and provision (Mannion *et al.*, 2006). The network of residential and day centres in the UK providing fieldwork or outdoor pursuit activities, numbered over 2,500 in the early 1980s (DES, 1983). From that point a decline in the field started to occur due to 'reduced central funding to local education authorities and a lack of a firm foothold in the academic curricula of schools'. As a result, large number of outdoor education settings closed down, and especially those owned by local education authorities (Higgins & Morgan, 1999, p.8).

From the 1980s, a concern for the development of school grounds emerged. A growing movement argued for schools grounds to include nature areas and many local authorities assisted and advised schools that wanted to develop their sites. In 1986 a research project looked at the educational potential of school grounds and that development led to the founding of the Learning Through Landscapes Trust (Sterling, 1992). In 2001 the Department for Children, Schools and families (DCSF – formerly Department for Education and Skills, DfES) recognizing a concern that young people are distanced from nature and the lack of pupils' understanding of where food comes from and how it is produced, launched the Growing Schools initiative (Growing Schools, www.growingschools.org.uk). Growing Schools aimed to encourage pupils' experience of farms and growing, with hands on experiences, and offered teachers training on how to develop and use the outdoor classroom and identify examples of good practice of how farms/growing can be used as a teaching tool across the curriculum (Dillon *et al.*, 2005). Growing Schools was comparatively modestly funded and was relevant to other government's initiatives such as Healthy Schools and the Food in Schools schemes, Gardens for Life, and Biodiversity initiatives (Scott *et al.*, 2003). This programme continues today.

The concern about the lack of opportunities for learning out of the classroom for young people continued, and characteristically a Field Studies Council report in 2002 argued that teaching science outside the classroom could be 'heading for extinction' (Barker *et al.*, 2002). Although there is no accurate evidence that proves a decline in the provision of outdoor education – it is difficult to obtain relevant quantitative data especially as the local education authorities do not have a common system for gathering data – the concerns can be regarded as reasonable, based on the fact that outdoor education centres have been closing (Higgins, 2002) owing to lack of funding. Furthermore, there is concern about issues related to the safety of out of school activities. After a number of recent accidents occurring during out of school activities a variety of governmental, local authority and other initiatives set out to address that issue (e.g. guidance for health and safety, teacher training, licensing authorities inspecting the organisations that provide outdoor education for health and safety) (DfEE, 1998; DfES, 2003). Despite the government's effort to reassure teachers about the safety issues when undertaking activities out of school with their students, the country's second largest teaching union (NASUWT) was reported to have 'advised its 223,000 members not to take children on school trips' because of fears associated with pupil safety (Clare, 2004).

Louv (2005) looks at the diminishing of outdoor education opportunities for young people as part of many other factors that lead to the disconnection of children from nature. The criminalisation of natural play in residential areas, the reduced amount of leisure time, the increasing consumption of electronic media by children, poorly designed outdoor spaces, parents' fear of allowing children's outdoor free play, and the overly structured lifestyle of many families are all something, as Louv sees it, contributing to de-natured childhood. Louv urges more attention to the phenomenon he calls *nature-deficit disorder* which describes the human costs of alienation from nature including diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses, with further consequences for the development of children and young people as environmental stakeholders. Supporting Louv's thesis, Christakis *et al.*'s (2004) study linked television-watching to ADHD (Attention-Deficit Hyperactivity Disorder). Louv sees nature deficit disorder as not only having an impact on children, but also affecting adults, families, and whole communities, and his ideas have been influential in the U.S. promoting the 'leave no child indoors' movement. Moreover, the concern about children's reduced outdoor experience and the loss of connection with the natural environment has been highlighted elsewhere, for example in Australia and other western countries (Barratt Hacking *et al.,* 2007; Malone, 2007). Malone (2007, p. 523), for instance, speaks of Australian middle class children who become 'bubble-wrapped' by

their parents who, in a climate of fear, restrict children's independent mobility and environmental play which 'could lead children to be lacking in environmental competence, sense of purpose, social competence, self-worth and efficacy and resilience'. Maller (2009) has argued that because the urban environment limits children's access to nature, the responsibility of providing children with nature contact is heavily placed on schools, through the physical environment of their grounds and through organising teaching activities within and out of the school borders. My research aims to explore the outdoor environmental experiences offered to the students when schools collaborate with botanic gardens, and also, how the settings' own organisational aims influence the focus of the outdoor activities.

Policy debates, policy documents, relevant research and reports constitute the evidence of the concern on the declining opportunities for outdoor learning. In addition, the need for stronger empirical and conceptual understandings of learning in the outdoor classroom has been stressed (Dillon *et al.,* 2003; Scott *et al.*, 2003; Dillon *et al.*, 2005). Further evidence of the interest in outdoor education is the 'Outdoor Education: Aspects of good practice' a government inspection report which evaluated the personal development aspects of outdoor education, with a specific focus on the work of outdoor education centres. It identified good practice and the unique contribution made by outdoor education to enhancing young people's personal and social development (Ofsted, 2004). The publication of the 'Learning Outside the Classroom Manifesto' (DfES, 2006a) can be described as a pledge of the government to all the stakeholders from schools, to outdoor education providers such as field studies centres etc, and the local authorities to sign up and commit themselves to promote out of the classroom learning for the young people.

> We believe that every young person should experience the world beyond the classroom as an essential part of learning and personal development, whatever their age, ability or circumstances (DfES, 2006a, p.2).

The government's policy on outdoor education and the publication of the Manifesto are related to other initiatives and policies such as Every Child Matters: Change for Children (2004) and the 'Sustainable Schools' initiative (2006). Although the importance of out of classroom learning has been recognised by almost every Minister of Education in England since 1997, it is the first time the government has explained why these learning experiences are valuable by reference to the evidence for educational impact. It is uncertain on the other hand how effective or strong government's actual support will be. For example, the government's financial support is not clarified and in 2006, 22 centres were facing cuts in provision and in budgets, and in the last decade 20 local authority

centres have closed. In the Manifesto, the government's future actions focus on disseminating good practice in the field, encouraging research on the provision of out of classroom learning, and the support of teacher training, seems to position its role as the mediator between schools and outdoor education centres, without for example introducing a stronger expectation for outdoor learning within the curriculum. Only a few state schools appear to place out of classroom learning at the heart of their curriculum. Radical change will be necessary if the vast majority of schools are to be able to fulfil the Manifesto pledges. Teachers are certainly looking for changes in the curriculum and an inspection regime less focused on test results (Revel, 2006).

A recent Ofsted report (2008b) on the impact of learning outside the classroom in primary and secondary schools and colleges across England – where previous inspections had shown the outside the classroom teaching was good, outstanding or improving rapidly – indicated that only a few of the schools they surveyed had a detailed knowledge of the government's Manifesto, and they were even unsure of how it linked with other national programmes. Ofsted (2008b) argued that when planned and implemented well, learning outside the classroom contributed significantly to raising standards and improving pupils' personal, social and emotional development. Furthermore, learning outside the classroom was most successful when it was an integral element of long-term curriculum planning and closely linked to classroom activities. However, Ofsted (2008b) highlighted that too many residential and other visits considered during their survey, did not have clear learning objectives, nor were integrated sufficiently with activities in the classroom. The survey also revealed that the schools lacked of assessing the effectiveness of the activities outside the classroom (Ofsted, 2008b).

Acknowledging the concerns for the decline of the provision of education out of the classroom, but also the lack of quantitative data about the amount and exact type of education out of the classroom and how trends in such activity have changed over time, the National Foundation for Educational Research (NFER) undertook an assessment of activity and practice in relation to education out of the classroom in schools and local authorities in England. The assessment identified that activities can take place on school sites, such as gardening clubs or learning through outdoor play, and also off-site (day and residential) to a range of locations, such as field study centres, farms, museums, community centres and adventure centres. The research argued that there is little evidence of a decline in out of classroom learning and the general perception within school and local authorities was that the extent of provision had either increased over the last five years or had remained broadly the same. Increases in provision were most commonly

reported for school-site activities especially in primary schools, while decline in activity was mainly reported for off-site day visits and residential trips in the UK and abroad. Teacher confidence was one of the key factors underpinning the extent of provision that was available to pupils in schools. The provision seemed to be supported more by CPD rather than initial teacher training, and by senior management and local authority support. Factors inhibiting the provision were health, safety, and risk management and costs, particularly the cost of travel (O'Donnell *et al.*, 2006).

2.4. From environmental education to education for sustainable development (ESD): a focus on developments in the UK context

Environmental education has incorporated ideas from significant philosophers, writers and educators such as Goethe, Rousseau, Humboldt, Froebel, Dewey and Montessori and in the UK environmental education's origins can be traced back to the end of 19th century when Scottish professor of botany Sir Patrick Geddes pioneered instructional methods which brought learners into direct contact with their environment, and in 1902 founded a field studies centre in Edinburgh (Sterling, 1992). Other influences on environmental education which have already been mentioned as part of outdoor education developments were nature, and rural studies. Sterling (1992) points out that outdoor education and environmental education shared common concerns, but in the early 1970s developments such as the establishment of the National Association of Environmental Education (NAEE), and at the same time of the National Association for Outdoor Education (NAOE) distinguished in a way the two fields. The gap between the two movements was reinforced with the publication of separate curriculum documents (HMI, 1979).

The first official use of the term environmental education in the UK was at a conference held in 1965 at Keele University, focusing on countryside conservation and the role of education. That conference also planted the seeds for the founding of the Council for Environmental Education (CEE) in 1968, and its work was to facilitate the theory and practice of environmental education at all levels of education, and monitor its progress and effectiveness (Palmer, 1998). CEE's early work was more successful in encouraging discussions and thinking among different disciplines than realising concrete achievements, mainly due to the lack of funding (Carson, 1978). The School Council's

Project Environment (1974), one of the most influential publications on environmental education philosophy in Britain, presented the components of environmental education as

> education not only 'in' and 'about' the environment, but 'for' the environment – thereby underlying the ethical and action oriented element as the ultimate aim (Schools Council, 1974 in Sterling, 1992, p.5).

One of the very important events in the history of environmental education was the first intergovernmental conference on environmental education organized by UNESCO in 1977 in Tbilisi, Georgia, which concluded in a framework that has had influence on the development of environmental education policies worldwide, and also provided an identity and framework for environmental education in the UK (Reid, 1998). The goals of environmental education were defined as:

- to foster awareness of, and concern about, economic, social political and ecological interdependence in urban and rural areas;
- to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
- to create new patterns of behaviour of individuals, groups, and society as a whole towards the environment (UNESCO, 1977).

Reid (1998, p.17) explains from a socially critical perspective that school subjects which promoted environmental education during the 1960s and 1970s, such as rural studies and environmental science, were lacking a critique of the causes of environmental problems. These subjects mainly promoted education about and in the environment ignoring the 'socio-political aspects of people-environment relations'. Huckle (1983) stressed the political aspect of environmental education and in particular education for the environment which he saw as contributing to environmental wellbeing, and critiqued environmental studies in school education as being apolitical.

In 1980s, the 'World Conservation Strategy' (WWF, UNEP, IUCN, 1980) promoted the links of development education and environmental education. Despite the influence of the strategy on conservation thinking, it had minimal impact on educational practice in the UK (Sterling, 1992). Other international policy developments and documents, such as the Brundtlad Report (WCED, 1987), 'Caring for the Earth: a Strategy for Sustainable Development' (WWF, UNEP, IUCN, 1991), Agenda 21, CBD, and the Global Biodiversity Strategy (1992) emphasised the need for more education, public awareness, and training in developing human resource capacity for biodiversity conservation, and

that the environment and development education should be incorporated as an essential part of learning, within both formal and informal sectors (Palmer, 1998).

Sterling (1992) pointed out that in the 1980s, the direct experience of nature and arousing children's feelings and senses through environmental encounters, was at the base of environmental education, an approach imported into the UK from the USA. Also rural studies had almost disappeared as a distinct school subject but urban studies gained popularity including a new focus on nature in towns. Environmental education according to Reid (1998) had a rather marginal position within most of the schools although in some cases it may have been taking place, without being labelled as such. One of the main issues in environmental education during the 1980s in the UK was whether, and to what extent, it would obtain a statutory role in the national curriculum (Reid, 1998).

In what follows, the focus on environmental education developments will narrow down from the UK to England, taking into account that each country – i.e. Wales, England, Northern Ireland, Scotland – has had its own but similar developments in the field. In 1988, the Educational Reform Act introduced the national curriculum to English schools, made it compulsory for schools to teach certain subjects and syllabuses. Gillard (2007) notes that teachers had little say in the design or construction of this national curriculum which was almost entirely content based, and teachers' and schools' roles changed from curriculum innovators to curriculum deliverers. National curriculum assessments were introduced and league tables began showing performance statistics of each school, and establishing a climate of competition within the education sector. The establishment of Ofsted, a school inspection organisation in 1992, brought more stress on school performance with its reports which publicly pointed to failing and achieving schools (ibid). As the schools were pre-occupied with the main subjects within a fragmented and overloaded curriculum, committing in practice to environmental education to raise pupils' environmental awareness, which requires coherency and planning across the curriculum, was not easy (Reid, 1998). During the 1990s, environmental education was included and officially recognized as a cross-curricular theme of the national curriculum for schools in England (NCC, 1990). The National Curriculum Council (NCC) in 1990 published a summary of the main aims of environmental education which were based on the 3 fold model of environmental education established by the Tbilisi conference, and reflected the three dimensions of learning i.e. knowledge, skills and attitudes. Specifically NCC (1990, p.7) suggested that

> environmental education can be thought of as comprising three linked components:

Education about the environment (knowledge)

Education for the environment (values, attitudes, positive action)

Education in or through the environment (a resource)

These contribute to planning in different ways. They are inter-related; as part of planning teachers should help pupils to make the connections.

Education about, in and for the environment was the main environmental education model promoted in that period, and it has provided a useful framework to analyse environmental education in theory and practice. Initially proposed by Lucas (1979), to overcome problems with the ambiguity of environmental education terms, he argued that equal importance should be given to all three forms of environmental education, and they should not be considered in isolation from each other. However, their separation has come to be accepted uncritically (Jickling & Spork, 1998). Ebutt (1992) explained that education about the environment may focus more on understanding the ecological principles of the environment rather than deeper understanding on how humans impact on the environment through consumption and production; education in the environment puts more emphasis on the place where the learning takes place rather than pedagogy; and education for the environment overemphasizes a particular viewpoint and fails to take account of different value systems, so it may end up to being indoctrination rather than education[6]. Fien (1993) argued that education about and in the environment are of value as long as they develop knowledge and skills to be the base for education for the environment. Huckle (1993) from a critical theory perspective highlighted that in schools and classrooms in the UK there is a predominance of 'education for environmental management' which coheres with the notion of education about the environment and hence environmental education as part of the restructuring of education serves to the greening of capitalism. Sterling (1992) noted that educators are more comfortable with developing knowledge (education about the environment) and skills (education in the environment) but have been hesitate to be engaged with a value-based, critical approach for changing attitudes or behaviour (education for the environment). Scott & Reid (1998) also commented that NCC adopted the three propositional model of environmental education (in/about/for), and emphasised particularly the importance of education for the environment without endorsing the emancipatory social goals – essential element of education for the environment according to critical theorists –, and also ignoring the

[6] A different way of conceptualising different approaches in environmental education is proposed by Scott & Gough (2003) which entails 9 categories of interest, captures better the variety and complexity of the focuses and objectives of those who espouse environmental education and is presented in 3.5.

history of environmental education in British schools 'where local and grass-roots development and interpretation of ideas were valued and encouraged' (ibid, p. 215).

In the early 1990s, an optimism about the developments in environmental education and a renewed interest in the field was expressed (Sterling, 1992). However, Palmer (1998), in the later years questioned the extent to which environmental education had been successful, despite the growing number of international meetings, initiatives, and publications that contributed to the development of thinking and documentation. Specifically, environmental education in the English schools was not planned or taught in coherent, and comprehensive way. Even if environmental education had gained a statutory role, Palmer argued, the lack of time and resources to devote to anything but the curriculum's core subject areas, placed the cross curricular themes to the margins of the educational system. On the other hand the curriculum revisions placed part of environmental education content into statutory subjects geography and science which were regarded as at the heart of environmental education traditionally. Environmental education was on the statutory agenda but the extent to which it was pursued relied on individuals' enthusiasm and motivation – and on the intent and tolerance of school leaders (Palmer, 1998).

Since the Brundtland report, and particularly after the Rio Summit, the terminology in the policy documents started focusing gradually on sustainable development and subsequently on ESD or EfS for those who use the term sustainability as a better alternative to 'sustainable development' 'in order to avoid perceived connotations of the 'word development' (Scott & Gough, 2003, p.12). Education was given a 'fresh' mission to promote that 'new' form of development which was the conceptual result of the realisation of the constrains put on continued development due to the availability of natural resources (Sachs, 1991). Environmental education has been trying to clarify its relationship and possible contribution to sustainable development. According to Knapp (2000), the Thessaloniki Declaration (UNESCO, 1997), celebrating 20 years from the Tbilisi Declaration, laid the foundation for EfS while neutralizing the term environmental education. Further international policy developments such as the WSSD in 2002, the Global Strategy for Plant conservation and later on the launch of the UNESCO decade of ESD called for integration of the principles, values, and practices of sustainable development in all aspects of education and learning.

ESD has been taken up for a variety of reasons including those who assume it is an advancement of environmental education that will contribute to solving today's problems,

and by those who see it as a way to transcend the limited scope of environmental education with its primary focus on the environment and its protection to integrating environmental concerns with social and economic development (Hopkins *et al.*, 1996; Stevenson, 2006). However it should be mentioned that a holistic approach encompassing social, economic and environmental issues was set out in the Tbilisi Declaration (see UNESCO, 1977). Critics of ESD argue that the 'for' preposition in the term can encourage indoctrination, and that it is questionable whether formal education can promote sustainable development when the schools are seldom examples of sustainability (Hopkins *et al.*, 1996).

Problems with the definition and the complexity of sustainable development and ESD, Stevenson (2006) argues, can be addressed in practice. Bonnett (2002) suggests that the educators will need to construct their own understanding of sustainable development which requires time and effort regarding the complexity of the concept. Another attempt to explain and better clarify issues of sustainable development and education is to conceptualise sustainable development as a 'learning process, through which we shall need to live more in tune with the environment' (Scott & Gough, 2003, p.xiv). Others see ESD as supporting the dictate of neo liberalism, with Sachs (1991), for example, warning of the risk of sustainable development becoming rhetoric to camouflage the commodification of nature and a kind of eco-technocracy which works for the wealthy. Smyth (1995) pointed out that environmental education came from a desire of people to protect the environment – both physical and living components – from human threats. In that case people regard themselves as part of the environment which is worth of protection per se. ESD can be seen as coming from a different perspective considering the environment as a reservoir of resources for development and conservation work as necessary to improve people's lives in equitable ways. In that case people see themselves as holding a dominant position in the environment which they will use, manage and protect as a means to achieve human development. Stevenson (2006, p.287) argues that 'the process of learning to live within ecological limits without human suffering must include uncovering the ideologies and power relationships that underlie the discourses of sustainable development'.

In that kind of highly contested area about what is the relationship of environmental education and ESD, or more importantly how to formulate and reformulate relationships between 'education' and 'environment' or 'sustainability', the issue now is how the practitioners will be able to make their own way, and use the policies' new rhetoric in an emancipatory manner, according to their communities' needs, and their own vision of a

sustainable future. After all the fact that the relationship of education, the environment or sustainability are still in flux can be considered as opening up possibilities for people to create and adopt their own interpretation.

Despite the definition problems, and many discussions on the concept of ESD, the British government started implementing the international agreements promoting sustainable development, and ESD. In 1998 the Government Sustainable Development Education Panel (SDEP) was formed and part of its work was to consider how schools could best actively promote ESD, to ensure young people obtain the knowledge and skills to be active citizens. In 2000, through the revision of the national curriculum, ESD was made a statutory component of the four main subjects of geography, science, design and technology, and citizenship, and was described thus:

> ESD enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both locally and globally, that will improve the quality of life now, without damaging the planet for the future (SDEP, 1998, p.4).

SDEP aimed to help students and teachers understand the complex theory underlying ESD, and distinguished seven key interrelated concepts as the components of sustainable development, i.e.

- Interdependence – of society, economy and the natural environment, from local to global
- Citizenship and stewardship – rights and responsibilities, participation, and cooperation
- Needs and rights of future generations
- Diversity – cultural, social, economic and biological
- Quality of life, equity and justice
- Sustainable change – development and carrying capacity
- Uncertainty, and precaution in action (SDEP, 1998, p.5).

Scott *et al.* (2002) stress that the work of the government's SDEP had little impact on schools and there is need to focus more on collaborative activities with associations and NGOs to stimulate curriculum and pedagogical development.

In 2005, the UK launch conference for the UN Decade of ESD was held in London aiming to identify the UK's contribution to the Decade's international strategy bringing

together practitioners and academics from the wider formal and informal British educational sector. However, UNESCO could only encourage the government to consider implementing the Decade within their educational systems and accordingly there was a lack of commitment at the time by the government and school management structures to teaching and learning of ESD (McLeod, 2007).

DCSF started publishing sustainable development Action Plans from 2003 as part of the UK sustainable development strategy. Nevertheless, a report about the progress in the field of ESD (EAC, 2005), stressed that there was a lack of leadership from DCSF, and no system for monitoring progress of the SDAP. The Environmental Audit Committee (EAC, 2005) stressed that there are problems with the terminology and use of the term sustainability. However, they said this cannot justify the lack of progress of education in environmental matters, whether it is called SD, ESD, environmental education, and the problems with implementation, and the lack of commitment of those who are responsible to educate or promote it. The report also highlighted that the government puts effort on developing schools well designed and managed sustainably but does not promote teaching students about ESD which is indicated by the 'patchy integration of ESD into the national curriculum' (EAC, 2005, p.5).

Since 2006 DCSF started promoting 'Sustainable Schools' as places of teaching and learning that help pupils understand the human impact on the planet and as models of good practice which demonstrate to young people and local communities, sustainable living and working (Teachernet, www.teachernet.gov.uk). 'Sustainable Schools' are part of the UK sustainable development strategy and the schools through the National framework for 'Sustainable Schools' are asked to consider how they can extend their commitment to sustainable development through eight key areas – or 'doorways': food and drink; energy and water; travel and traffic; purchasing and waste; buildings and grounds; inclusion and participation; local well-being; and the global dimension (DfES, 2006b).

It should be noted that there is a variety of initiatives closely related to ESD with overlapping areas of activity, which in combination with the definitional problems of sustainable development and ESD, cannot but confuse more, or waste teachers' and educators' energy as they are supposed, every time new initiatives arise or ESD policy changes rhetoric, to understand and adjust their practices. For example, QCA (from 2002), supported and developed curriculum guidance on ESD through the seven interrelated key concepts developed by SDEP (see previous page), but these have been

abandoned in the light of the doorways concept. DCSF (2008) in an attempt to bring together the variety of overlapping educational initiatives, suggested that a school may work towards becoming sustainable through adopting a scheme such as Eco-schools, Healthy schools, RHS campaign for School Gardening, Growing Schools etc. and that the 'Sustainable Schools' initiative is related to outdoor education and the 'Learning Outside the Classroom Manifesto'.

Despite the growth of external award schemes such as the Eco-schools, and the 'Sustainable Schools' initiative, there is need for more evidence on how schools implementing the schemes have significantly reoriented their work (Scott, 2007). A recent Ofsted assessment (2008a) of teaching about sustainability and progress towards the implementation of the National framework for Sustainable Schools, with a sample of 41 primary and secondary schools, highlighted that the large majority of schools inspected had a lack of awareness of sustainable development and of relevant national and local government policies. Very few teachers knew about the 'Sustainable Schools' initiative and it was rarely a priority for development. Sustainable development was also considered a peripheral issue, confined to extra curricular activities and special events, involving only a minority of pupils rather than being an integral part of the curriculum. Primary schools were more successful than secondary schools in promoting sustainability and especially through using the school grounds as a resource for learning (Ofsted, 2008a). It can be inferred that, no matter how many international educational initiatives or policies have focused on ESD, or no matter how much rhetoric has been developed in the UK on ESD and 'Sustainable Schools' and relevant initiatives there is still little evidence to show that many British schools are really engaged and are implementing the suggested policies. McLeod (2007) referred to barriers for schools to implement ESD; these include staff mobility, especially when the enthusiastic individuals who are responsible for schools' sustainability policy move to another school, and because of this, it is likely that the school's sustainability activity will fall short. Also staff development is lacking as government has not made provision for this kind of training. Another important factor hindering schools from implementing ESD is the fear of 'failure' to meet the inspection standards in relation to the academic achievement of the students and generally freedom and creativity is not encouraged (McLeod, 2007). Two recent reports focused on the progress of English primary and secondary schools in implementing ESD and showed the benefits and positive outcomes that those schools achieved(Ofsted, 2009; Gayford, 2009). The sample of the schools in both studies does not represent all the English schools, but rather indicates the potentials for the schools that commit to ESD. Both studies suggested that in the most successful schools, sustainability was an integral element of a well

planned curriculum, and sustainability was explicitly valued within the school. In addition, both studies identified as an effective approach to sustainability when pupils are given a more active role to pursue their learning by conducting research, taking part in debate and discussion, getting involved in planning and presentation of the activities (Ofsted, 2009; Gayford, 2009). Ofsted (2009) reported that according to the head teachers of the schools they inspected, education for sustainability had been an important factor in improving teaching and learning in the school more generally. Similarly, Gayford (2009) stated that standards of achievement, behaviour and attendance in the schools that were committed to ESD, were generally high relative to standard measures.

Looking at the ESD policy of DCSF and how it has developed, some progress seems to be happening, especially through the 'Sustainable Schools' strategy; however it should be noted that ESD is in continuous competition with other educational policies, and holds a low position in comparison to the major emphasis on literacy and numeracy standards that dominate the education systems of technocratic societies such as England, nowadays.

2.5. A picture of British botanic gardens education practice today

Since this research is based on provision within botanic gardens for primary education and collaboration with schools in Britain, it is relevant to have a picture of how British botanic gardens have or have not integrated BGCI's guidelines for environmental education and ESD, and also how they are linked with the formal primary education system, the national curriculum, and educational initiatives. The following examples are based on online information mainly on the botanic gardens' websites and proceedings from the international conferences organised by BGCI. The limited available sources of information, especially the lack of research based evidence, is another example that botanic garden education is a very poorly researched area.

Some common elements can be identified across the educational programmes in different gardens which tend to be linked with the national curriculum. The evidence suggests that the schools can choose education staff taught programmes or a self-led group visit. There is a variation of costs for this provision. Some gardens do not charge, even for education staff led programmes (e.g Oxford Botanic gardens, www.botanic-garden.ox.ac.uk), while other gardens charge not only for the educational staff-taught programmes but also for the

self-led group visits at a lower cost (e.g. National Botanic Garden of Wales, www.gardenofwales.org.uk). Almost all of the gardens provide online risk assessments for their setting, which will assist teachers in filling the forms for their school visit. The assisted activities provision varies, from one session of 45 minutes to a whole day (until 2 or 3 pm). In the second case, the school teacher may be asked or required to have a planning meeting with the gardens' educator prior to the school visit. The activities offered may be available throughout the year, or depend on the seasonal changes of the gardens' living plant collections. Resources are often available for the school teachers to lead the school visit, or just to complement the school visit when the educator-led activity is covering only part of the visit to the gardens. Apart from the school visits the gardens may offer CPD courses for teachers (e.g. Wakehurst Place, www.kew.org/learn/schools/wakehurst; RHS, Wisley, www.rhs.org.uk/Children/For-schools; Royal Botanic Gardens Edinburgh, www.rbge.org.uk/education), outreach programmes where garden educators deliver courses in schools (e.g. Chelsea Physic gardens, www.chelseaphysicgarden.co.uk/education), and special school-garden collaborations e.g. a wetland restoration project at Kew Gardens assisted local schools to develop the gardens' area for educational purposes (Royal Botanic Gardens, Kew, www.kew.org/learn/schools/kew/resources).

In describing their educational programmes for schools, botanic gardens highlight the links of the activities on offer with the national curriculum. As they are targeting schools it would seem reasonable in order to attract their 'customers' to satisfy their needs one of which is fulfilling the national curriculum requirements. Especially as the schools are continuously under pressure for their pupils' academic achievements, and meeting Ofsted standards, it is imperative to justify a school visit in terms of the curriculum links. But what happens with the botanic gardens' mission and the commitments to international strategies for conservation including the education provision? By looking at a British botanic garden school educational programme, national curriculum related activities are prioritised and within these, conservation, environmental, sustainability issues are included where possible. Sanders (2005) explains that one of the reasons for emphasis on the national curriculum in botanic garden educational programmes is the 'model of practice that is inherited by successive education staff'; for example at the University of Oxford Botanic Garden a reactive model of education has been inherited rather than a proactive one. The education programmes were developed according to the school teachers' request rather than designed as part of the garden's education policy. This is often the case in botanic gardens where previously there has not been specialist education staff.

Botanic garden educational work in Britain emphasises its links with the curriculum but also with other educational initiatives such as Growing Schools, healthy schools, Eco-schools, 'Sustainable Schools'. That is again an attempt to highlight the variety of services that the botanic garden education team can offer to the schools. The Royal Horticultural Society's Wisley (RHS) garden, through the 'Campaign for school gardening', supports with resources and advice schools that want to develop their own gardens. For the school visits, Wisley offers activities to teach pupils how to grow plants. The RHS website illustrates how a primary school could use the schools garden to teach many aspects of the curriculum. RHS offers CPD courses for teachers and support staff on topics related to the use and development of school grounds, giving practical experience, activities and ideas how to use horticulture in all areas of the curriculum. Gardening is also promoted to the schools as a way to deliver the goals of 'every child matters' and 'learning outside the classroom' policies. RHS provision illustrates how the schools are encouraged to act as models of sustainability for local communities through the initiative of 'Sustainable Schools'. Gardening is linked with the doorways through which schools can approach sustainability. For example in terms of the food and drink doorway school gardens show pupils how to produce healthy, local and sustainable food for themselves, while developing an understanding of commercial food production and relevant environmental issues such as GM food (RHS, www.rhs.org.uk/Children/For-schools).

Another example of how a botanic garden has links with formal education initiatives is the Birmingham Botanic Gardens & Glasshouses which displays permanently a show garden as part of the 'Growing Schools' initiative which aims to 'show how teaching and learning can take place outside the classroom, within school grounds, and in a wide variety of places and spaces beyond the school' (Growing Schools, www.growingschools.org.uk). Sustainability is an important element throughout the garden which has many features made from recycled materials. Ways to attract wildlife in the school grounds are also demonstrated and the show garden is also used to train and advise teachers on what can be achieved in and beyond the school grounds (The Birmingham Botanical Gardens & Glasshouses, www.birminghambotanicalgardens.org.uk/education).

It is evident from the above examples how outdoor and environmental/sustainability education are interlinked in the botanic garden education provision. Environmental education as a term is rarely used when botanic gardens present their educational

programmes, and when it is mentioned, it is mainly linked with education about the environment (Oikawa & Kendle, 2001). It can be argued that when ESD is mentioned as part of garden programmes – in a rather marginalised position usually – it is more focused on people's interaction with the environment, or people's individual behaviour changes for the environment, isolated from a sense of a more collective action. For example, the National Botanic Gardens of Wales argues that 'our programmes are devised to provide what we term 'Essential Environmental Experiences' in the outdoor environment' and one of the programmes they offer for KS2 pupils is named 'Everyday Choices' linked with Sustainable Development and Global Citizenship.

Looking at BGCI's educational work moving from environmental education to ESD as promoted by international organisations, especially UNESCO, and also the way that botanic gardens in practice promote environmental/sustainability issues, it can be argued that ESD has been adopted rather uncritically. For example ESD advocates the need for equal attention given to economic, social and environmental development. There is little indication in the botanic gardens' programmes that all the three aspects are equally addressed. By looking at the various approaches on the emergence of ESD (as explained in 2.4) and the current state of environmental education there is an opportunity for botanic garden education departments to reflect on their practices and the assumptions that underlie them. What kind of relationship of humans and the environment do they promote through their education programmes? Do they create a utilitarian picture of the environment or do they position humans in equal place among the other components of the environment? Whose interests will they serve by adopting the sustainable development discourse? What is the education they offer for? These kinds of questions can be posed on different levels from the education department of a botanic garden to the individual educators and in relation to the choices they make about what and how they teach. The reasons for suggesting this kind of 'provocative' reflections to the botanic garden educators, is because botanic garden education currently is oriented mainly towards increasing students' knowledge about the environment, and providing experiences in the environment, which are both very important and valuable from an educational point of view, but lack behind towards motivating young people to thinking critically about environmental issues.

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This chapter has started by examining how botanic gardens' role changed since their original focus in the 16th century as physic gardens, to a current focus on conservation and more recently on climate change. The educational role of botanic gardens, developed

slowly at the beginning of the 20th century by providing specimens to schools, and (rarely) activities in the gardens such as planting specimens, and later on guided tours. It was refocused in the 1980s and 1990s in a more coherent and organised way according to environmental education and later on ESD guidelines. In the UK, particular developments of outdoor education were presented until a renewed interest emerged in educational policy in providing out of classroom experiences for pupil development. Environmental education also changed and is currently promoted by government as ESD within the British education system and the effectiveness of the policy implementation was questioned. Within these changes in the UK context, UK botanic gardens, including the gardens of my research (i.e. Wakehurst Place, Kew Gardens) offer a variety of programmes that encourage garden-schools relationships. With a focus on school visits and activities in the gardens based on the national curriculum requirements, and also related to government educational initiatives such as Growing Schools, healthy schools, Eco-schools and 'Sustainable Schools', environmental education and ESD, the programmes have received great attention in the international policy documents of botanic garden education (through the guidance of BGCI), but in practice, they have been integrated in the gardens educational programmes in a rather marginalized way. Having presented the policy and practice context, I will continue in the next chapter with research in outdoor, environmental and sustainability education, aiming to conceptualise interorganisational collaborations (schools-garden relationships are regarded as such), and also to gain an understanding of current knowledge on learning in informal settings which will be the main focus of my research.

Chapter 3. Literature review: the research context

⌘ Chapter Introduction

My research explores how botanic gardens and schools as organisations collaborate. Within a collaboration framework, integration of in-school and out-of-school learning, and also pupils' environmental experiences, will be further examined. Having placed the research in the policy and practice context, the literature review continues to the research context where literature related to collaboration will be explored. Early on in the literature search, I realised that there is little literature within environmental, sustainability and outdoor education that focuses on and theorises the collaboration of schools and other organisations. For that reason I draw upon organisational literature from disciplines other than education e.g. management. Viewing school-garden collaborations as interorganisational collaborations, suggests the need to examine elements such as membership, structure, goals, resources and output, and the operation of the collaboration within an environment (Borthwick *et al.*, 2003). The literature review continues by presenting research on botanic garden education, an emerging body of knowledge in which I am aiming to contribute and for that reason I will particularly refer to research on school education and learning in botanic gardens, and research gaps that have been identified. Learning accruing from the interorganisational collaboration of botanic gardens and schools is at the heart of my investigation and for that reason I will also present and discuss what has been already investigated on learning as process and outcome in the fields of environmental, sustainability and outdoor education. Gaps in that body of knowledge will be identified. As I aim to examine learning experiences, I will refer to how experience can be conceptualised in different ways, and the implications of this for my research. The chapter will conclude with a review of theories of learning which can provide meaningful explanations for experiences in outdoor education settings such as botanic gardens. Frameworks that explain learning in museums, and similar settings will be discussed, and theoretical issues in relation to behavioural change and learning will be addressed. The review combines research and theories from both collaboration and learning since these areas of interest are inherently linked in my research.

3.1. Defining collaboration

Collaboration, networking, cooperation and partnership are some of the labels used when individuals or organisations work together. Getting entangled in an argument for the best definition or for distinguishing the variety of terms, seems meaningless. For example, collaboration and partnership are often used interchangeably (Connolly & James, 2006; Barragree, 2007); also in practice collaboration is commonly interchanged with cooperation and coordination, however, in the academic world attention is often paid to distinguishing among cooperation, coordination, and collaboration (Mattesich & Monsey, 1992). As Huxham (1996) put it, there is no agreed terminology for what might be loosely described as 'a very positive form of working in association with others for some mutual benefit…Collaboration means any situation in which people are working across organizational boundaries towards some positive end' (Huxham & Vangen, 2005, p.4). For the purposes of this review, but also for my research overall, I will mainly use the term collaboration to avoid confusion; however, I will draw from literature that uses alternative terminology as the aforementioned.

Collaborative ways of working are described in various ways in the literature of organisational and educational studies. Mattessich & Monsey's (1992, p.11) working definition of collaboration entails:

> 'a mutually beneficial and well defined relationship entered into by two or more organisations to achieve common goals. The relationship includes a commitment to: a definition of mutual relationships and goals; a jointly developed structure and shared responsibility; mutual authority and accountability for success; and sharing of resources and rewards'.

Moreover, Gray (1989, p.5) defines collaboration as 'a process through which parties who see different aspects of a problem can constructively explore the differences and search for solutions that go beyond their own limited vision of what is possible'. That kind of definition diminishes the notion of collaboration to problem solving excluding instances of collaboration that do not focus on obstacles or barriers and restrict the understanding of the phenomenon (Roberts & Bradley, 1991). However what is important here, is that the above definition in a way suggests a 'solution' that is 'beyond the organisations' own limited vision of what is possible'.

The relationship of botanic gardens and local schools entails a variety of actions, activities and may take various forms, hence, an open approach to the concept is more appropriate encompassing the view that both schools and botanic gardens come together to achieve what they could not achieve on their own. Alberta Sebolt's (1980 in Barragree, 2007, p.15) definition of museum-school collaboration is also applicable to the botanic garden-school collaborations:

> collaboration means you are willing to work together to create, develop, design and implement a program which you both want. Most of all, collaboration means a promise of time spent in learning about and from each other, while planning a program to address learner needs through clearly defined objectives.

3.2. Attempting to theorise on collaboration

Wood & Gray (1991) pointed out the rising interest of research in interorganisational relationships, as organisations form collaborative alliances to cope with the uncertainty and complexity of their environment. However they stressed that organisational theory is lagging behind practice, and in order to explain collaborative organisational form, the focus of theorising should move from the individual organisation to the interorganisational domain. In order to understand collaborative alliances, and build a theory, they regard three broad issues essential which have been identified by case study research:

a. the preconditions that make the collaboration possible and that motivate stakeholders to participate
b. the process through which collaboration occurs
c. the outcomes of the collaboration.

Huxham & Vangen (2005) propose the theory of collaborative advantage, which is a practice oriented theory based on action research in a variety of collaborative efforts, as a framework which explains the nature of practice of collaboration. The collaborative advantage concept suggests that in order to gain real advantage from collaboration, something has to be achieved that could not have been achieved by any one of the organisations acting alone. The theory of collaborative advantage is themes-based, and each theme conceptualises issues that face those who have to confront collaborative situations. The themes may be relevant to any stage in the life of collaborative practice and lead to thinking about how to manage collaborative situations. However collaboration

is complex and multifaceted and there are no easy routes to success; for that reason the themes should be regarded as 'handles for reflective practice'. The theory aims to understand the complexity of collaborations and convey it in a way that will seem relevant to partners. The themes are not viewed as performance factors, but as aspects of the nature of collaboration that may arise and need to be managed. Understanding the problems being experienced can result in increasing self confidence and empowerment. Figure 3-1 illustrates the theory of collaborative advantage which is based on four different types of themes: a) issues perceived by practitioners to cause anxiety or reward in collaboration, b) a theme that was not raised by practitioners explicitly, but appeared to cross-cut most of those that were raised (the theme of membership structures), c) themes that were raised by policy makers, and d) themes that were raised by researchers as having potential application to collaboration.

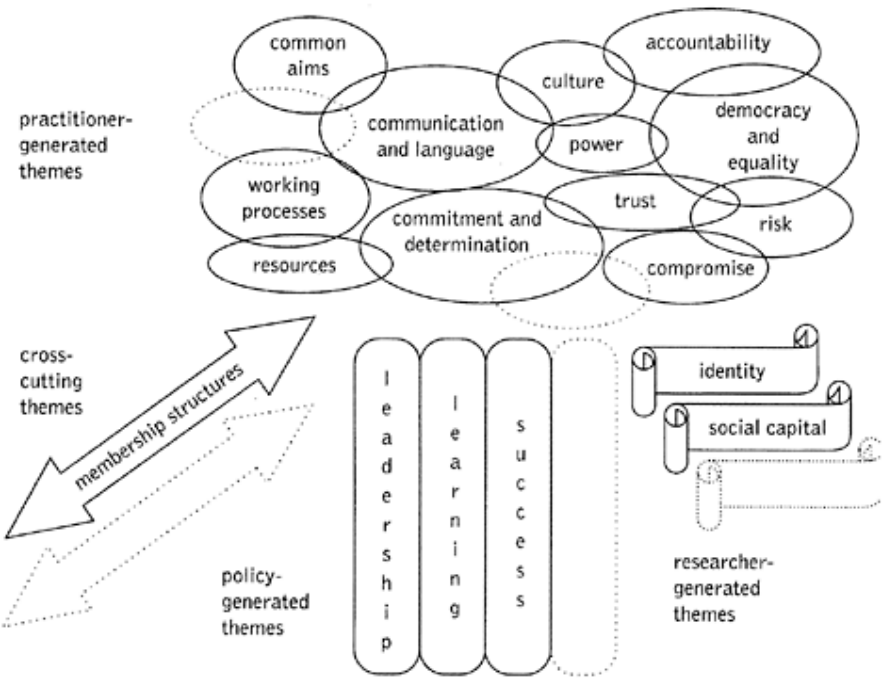

Figure 3-1 Types of themes in collaboration practice (Huxham & Vangen, 2005, p.38)

Huxham & & Vangen (2005) characterise trust as essential for successful collaboration, and a key issue in the nurturing of collaboration. They suggest that trust building is a cyclical process, within which positive outcomes form the basis for trust development, and that process is illustrated in the 'trust-building loop' (figure 3-2). Challenges in initiating and sustaining trust involve forming expectations (identify partners and agreeing collaboration aims), managing risk, dynamics, power imbalances, and nurturing the collaborative relationships

Figure 3-2 The trust-building loop (Huxham & Vangen, 2005, p.155)

Cobb & Quaglia (1994) looking at research conducted on types of school – business partnerships, developed a model that includes factors inherent in partnerships and suggest that schools and businesses need to move beyond the typical partnerships and create 'school-business relationships'. They suggest that there are organisational and personal dynamics that need to be present for successful relationships between schools and business and attention paid to the micro-level interactions among participants. They came up with two strands of thought regarding the organisational and personal interactions between schools and businesses (see table 3-1).

Table 3-1 Choices that exist when establishing school – business partnerships (Cobb & Quagglia, 1994, p.5)

Partnership domain	**Relationship domain**
Static	Dynamic
Establishing structure	Establishing relationships among people
Concentrates on organisational needs	Concentrates on individual needs
Insulated from self-evaluation	Self examining
Defined power base	Multiple Power bases
One-way benefits	Multiple benefits
Status-conscious	Task-oriented

Cobb & Quagglia's (1994) model is not one that can be generalised uncritically. They point out that determining the success of business-school partnerships requires accurate assessment of their effectiveness, including measuring student outcomes which is a difficult task. They propose more study on the long term impact of partnerships on

student achievement. Their model does not intend to depict a definitive model for all school-business partnerships to follow which will ensure success but it aims to offer insights regarding the dynamics and characteristics of partnerships that appear to be effective in instituting fundamental curricular change.

Another model that focuses on how organisations work together was developed by Hord (1981). The model (see table 3-2) distinguishes cooperation from collaboration i.e. cooperation is when two individuals or organisations reach some mutual agreement, but their work together does not progress beyond this level. Collaboration is the development of the mode of joint planning, joint implementations, and joint evaluation between individuals or organisations. Using a metaphor, Hord (1981) describes dating as a cooperative venture and marriage as a collaborative one. Cooperation and collaboration can be seen as two types of efforts in which two or more parties work together, each requiring different kinds of input, and different levels of commitments, and yielding different types of returns. In that model there is a continuum of behaviours based on the level of involvement in the partnership. The model of cooperation vs collaboration is proposed as a framework that will help the participants to clarify the ways they work together, depending on the needs of the institutions, and on each one's expectations of the results that working together will produce. When expectations are not shared, conflict may appear. Hord (1981) does not argue that interactions between organisations that are based on the collaboration model are more likely to be successful, than organisations that adopt a cooperative mode of working together. What is important is that the organisations agree and clarify from the beginning which mode of working together they will adopt.

Table 3-2 Models of organisations working together (summarised from Hord, 1981)

Model A Cooperation	**Model B Collaboration**
Steps in beginning process	
One organisation approaches another and receives permission to complete a task	Organisations agree on an exchange of tasks offering the other a product or service
Communication	
One organisation conveys information to the other at occasional intervals	Communication roles are established and definite channels are created, for interactions across the organisation

Model A Cooperation	**Model B Collaboration**
Resources/Ownership	
One organisation provides resources and expertise, and the other organisation provides access, setting, situation	Both organisations contribute staff, time resources, and capabilities
Requirements/characteristics	
A problem area is identified by one organisation and permission obtained from the other to research or analyse it.	Both organisations spend much time and energy; action and risks are taken by both groups
Leadership and control	
Unilateral leadership with different central control in each organisation	Dispersed leadership with shared mutual control
Rewards	
One organisation gets its product and the other organisation may be able to use it.	Both organisations are able to share a product or service which would not have been possible as separate agents

King (1998) developed the Partnership Structure Continuum (figure 3-3) to illustrate different levels of partnerships as they were examined in a multi-case study on museums and schools that joined forces to create the museum school, an innovation that blends formal and informal learning. The museum school is a project developed through a partnership between at least one school and one museum, in order to create a curriculum that combines the formal learning objectives into long-term projects, that require students to create objects, exhibits, museums.

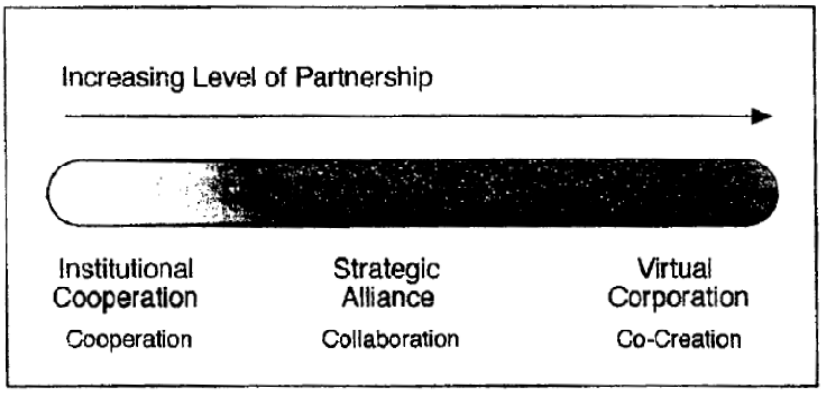

Figure 3-3 Partnership Structure Continuum (King, 1998, p.7)

The darkening of shading in the continuum, depicts an increase in the level of collaboration and inderdependence, as well as an increased amount of systemic change required to design and implement the program. In institutional cooperation both the school and the museum remain as separate entities, with little or no cross over between the institutional and individual roles. In the virtual corporation range, the school has extensive partnership with the museum and the lines between museum and school are so blurred that participants almost could not identify where the school ended and the museum began (King, 1998). The model aims to develop a broader understanding of the museum – school phenomenon, arguing that there is limited number of model programmes that other schools may incorporate in their own designs for the purpose of school restructuring and educational change. Although the research explicitly distinguishes the different models that exist, it does not provide evidence of any values shifting, differences in learning and other outcomes of the collaboration when the continuum shifts from the institutional cooperation to virtual corporation.

All the above models suggest a classification for the interactions of organisations on a continuum where the level of involvement and the quality of interaction rises from one edge to the other. However, the models do not provide evidence that from the one end of the continuum e.g. partnership, to the other end e.g. relationship (see Cobb & Quagglia, 1994) the outcomes of the organisations' interactions maybe more successful. It is important to note that the success of the interactions is not investigated sufficiently especially, as the meaning of success is not clarified. The main argument supported by the models is that when the organisations become partners, by clarifying and agreeing in which range of the continuum they will position their interaction, then respective expectations are set, which are more likely to be fulfilled. Finally, as collaborations/partnerships are regarded as highly situational (Hord, 1981) Bainer (1997, p.143) warns that we 'should not be prescriptive about the kind of partnerships we try to establish in education. We should empower the partners to seek their own place along the partnership continuum given the context in which they work'. The challenge for my research was to investigate patterns within the collaboration of Wakehurst Place with three local schools and identify potential modes of collaboration that work better than others, having first clarified the criteria for success.

3.3. Literature on the factors that contribute to the success of interorganisational collaboration

Looking at the literature on collaborations with reference to the preconditions, process and outcomes of collaboration, one major issue encountered is that not much evidence from systematic empirical research is displayed. Quite often the papers reviewed were descriptive, and few of them reported research. Bainer (1997) noted that although partnerships are promoted as agents of educational reform, evaluation and research on the impact of partnerships on teachers and pupils is lacking. Jones & Maly (1988 in Thorkildsen & Scott Stein, 1996) suggest that understanding better the dynamics of partnership increases the likelihood that people from schools and other organisations will sustain and nurture the collaboration long enough to achieve positive outcomes. Looking at literature from environmental and outdoor education research that investigates school-museums or school – field studies centres and other outdoor education settings, usually focuses on the outcomes of the collaboration, for example the impact on the teachers and educators, and more often on the students' learning and experiences (e.g. Driscoll & Lownds, 2007; Paris *et al.*, 1998; Bainer *et al.*, 2000). The process of collaboration is usually described as the background information, and in a few cases there is reference of specific aspects of the collaboration that were regarded as influencing positively the outcomes of the collaboration without evidence though of measuring, and assessing the influence. For instance, Paris *et al.* (1998) investigated the effect of an extracurricular science programme on students' interest and learning about biology, which was the result of a museum-school-university collaboration. The research pointed out that the model of the collaboration between museum-school-university is an example to follow, highlighting as a strong point of the collaboration the exchange of resources, people and facilities, training, experience and expertise between the organisations for the benefits of both students and the organisations.

Mattessich & Monsey (1992) pointed that in the literature when collaborations are described, often it is not clearly stated whether specific factors directly influence the success of collaboration. It is also important to define better, and measure, what we mean by successful collaboration, especially if we want to establish and replicate partnerships (Mattessich & Monsey, 1992; Bainer, 1997). Legler & Reischl (2003) propose assessing the quality and effectiveness of a collaboration using as variables the assessment of the activities or tangible accomplishments and the climate which comprise the feeling that is conveyed in a group and the way in which members of the organization interact with each

other or with outsiders. The concept of climate can be useful in examining the quality of interpersonal relations, structure, and other organizational factors. Success could be also identified in terms of the continuation/longevity of the relationship, but that is not always the case, as some partnerships are purposively dissolved after a period of time. Mohr & Spekman (1994) use as an indicator of collaboration success the attainment of the goals that the collaboration has set to achieve in the beginning of its formation (objective indicator) (also proposed by Legler & Reischl, 2003; Wood & Gray, 1991). In addition they use as a second success indicator the satisfaction of one party with the other (affective indicator). They argue that success is determined in part by how well the partnership achieves the performance expectations set by partners.

Huxham & Vangen (2005) distinguished three approaches to research on collaboration: a) describing the process of collaboration in terms of phases or stages in a life cycle, b) identifying attributes, conditions or facts that may determine the chances that the collaboration will perform with success or not and c) developing a set of tools to support collaborative activities. Attempting to make sense of the available research and conceptualisation of collaboration, I decided to focus on the identified factors that contribute to the success of collaborations. This approach is aligned with my interest in contributing to the botanic gardens' and schools' practice as they could use these factors as a way to evaluate, or improve their collaboration.

As a basis for a categorisation of factors that contribute to successful collaborations (table 3-3), I used Mattessich & Monsey's (1992 and later revised Mattessich *et al.*, 2001) research review of organisations' collaborations from the areas of social science, health, education, and public affairs, combined with a categorisation of conditions for successful museum-schools' partnerships (Institute of Museum Services (IMS), 1996). Mattessich & Monsey's (1992) review is based on research that clarified which characteristics were directly contributing to the success of collaboration, and it has been used by other researchers investigating collaboration (e.g. Brown, 2004; Vangen & Huxham, 2003; Tschannen-Moran, 2001). On the other hand, the IMS (1996) categorisation was the result of a qualitative study of 15 museum-schools' collaboration in the USA. In addition where it is relevant, factors or evidence from other research will be included to enrich the categorisation. The factors will be described within six main categories according to Mattessich & Monsey (1992) i.e. environment, membership, process/structure, communication, purpose and resources (table 3-3). A detailed description of each factor is displayed in the Appendix 1.

Table 3-3 Categorisation of factors contributing to successful collaboration

Categories	Factors
Environment Includes geographic location and the social context into which the collaboration operates	1.History of collaboration
	2.Collaborative group seen as a leader in the community
	3.Political social climate favourable
	4.Location/distance between the organisations
Membership Refers to skills, attitudes, points of views of the individuals and culture and capacity of the organisations	5.Mutual respect, understanding, trust
	6.Appropriate cross section of members
	7.Members see collaboration as in their self interest
	8.Ability to compromise
	9.Commitment
	10.Establish relationship between people
Process/structure Refers to management, decision making and functions of the collaborative group	11.Multiple layers of decision making
	12.Members share a stake in both process and outcome
	13.Flexibility/ dynamic nature
	14.Development of clear roles and policy guidelines
	15.Adaptability
	16.Appropriate pace of development
	17.Understanding the school's needs in relation to the curriculum
Communication Includes channels used to distribute information, convey opinions to influence the groups' actions	18.Open and frequent communication
	19.Established informal and formal communication links
Purpose Refers to the reasons for the development of the collaboration, the goals aimed at, and the respective tasks that will achieve these goals.	20.Concrete, attainable goals and objectives
	21.Shared vision
	22.Unique purpose
Resources Includes financial and human input that is needed	23.Sufficient funds
	24.Skilled convener

Matteschish & Monsey (1992) reviewed the research on organisational collaboration and suggested that the more that studies identified a factor, the greater the factor's influence in the success of collaborative projects. They concluded that the largest number of studies identified membership characteristics, which implies that the attributes of the members of a collaboration are more important than anything for the success of collaboration. Hence potential collaborators should concentrate on bringing together the right partners, and building a positive atmosphere among them. However, benefits from collaboration may be achieved even if not all the success factors are present. Also, many factors are interrelated, so building one factor may strengthen another. Matteschish & Monsey (1992) suggest that further research may confirm or expand their compilation of factors and measure better what is meant by successful collaboration. Bearing in mind the situational nature of the collaboration between organisations, I will use the above categorisation to inform my data analysis on the factors influencing the collaboration of Wakehurst with the local primary schools.

3.4. Research in botanic gardens education

Since the purpose of Chapter 3 is to present literature related to my investigation, and identify gaps that my research may inform, I will continue with presenting research in botanic garden education with a focus on what has been found in respect to learning in botanic gardens. Locating research in botanic garden education has been a challenging endeavour since the field is just starting to develop, as Sanders (2005) also suggested. A variety of methodologies have been employed from qualitative e.g. action research (Atiti, 2008), participant observation (Jones, 2003), interviews (Sanders, 2005), mixed methods with a combination of interviews and questionnaires (Stewart, 2003; Oikawa, 2000), and purely quantitative e.g. research using pre and post questionnaires (Ballantyne *et al.*, 2006). Some of the research focused on school visits (Stewart, 2003; Sanders, 2005; Tunnicliffe, 2006) exclusively, or school visits in relation to other group of visitors e.g. families (Jones, 2003; Ling & Jin, 2007) while others aimed to have a wider view of botanic garden education worldwide (Oikawa, 2000), or focused on other groups visiting the gardens such as general public or specific groups i.e. families (Peacock, 2006; Ballantyne *et al.*, 2006). Some aspects of garden education activities are under researched, such as outreach programmes or longer term projects with schools or other groups of the public, and it is important to conduct research on such long term projects as

they are likely to have stronger impact on the participants especially in addressing environmental issues and on people's attitudes or practices. Most research in botanic gardens education examines one-off experiences in the gardens i.e. visits, in the majority self guided or educators' led gardens tours.

My research aims to add to the above field, focusing on botanic gardens – school collaborations and, even if I will focus mainly on school visits, I will also look at the relationships of the organisations i.e. schools and botanic gardens as they developed over the years, which means that some of the participants' experiences in the gardens will have been more than just one-off. In addition, I should mention that although most of the previous research highlighted the importance of addressing environmental issues in the gardens, in practice, these did not come across in the activities offered, and with my research I intend to explain the reasons for that and suggest alternative ways for addressing them.

A common element in some research is an emphasis on hands on, experiential learning and the use of senses during the experiences in the gardens (Jones, 2003; Stewart, 2003; Sanders, 2005). For example, a teacher from a school visiting the New York Botanic Garden commented, 'pupils living in cities have the opportunity to experience nature in a botanic garden, where the 'hands-on' experience is a preferred method of teaching and learning; you know it's messy, but I think it's much better' (Sanders, 2005, p.243). Edward, an eleven year old boy after a visit to the local botanic gardens was interviewed and when he has asked 'how do people learn about the environment so that they treat it with respect' he answered:

> I think to learn you've got to have hands on experience. If you just learn from textbooks about the environment – say about how plants are green – you don't actually look at them, you don't experience them'. He also added how personal experience is really important to developing a better understanding about the environment. After all, you can't always believe what teachers say, and book and television can only tell you so much (Jones, 2003, p.2).

In terms of the learning experiences only a few research studies have highlighted the importance of the previous knowledge and experiences of the visitors as influencing their experiences and the new knowledge they get in the gardens (Sanders, 2005; Jones, 2003; Ballantyne *et al.*, 2006). The above research shows that visitors link their experiences and new knowledge in the gardens with previous knowledge but does not explain in-depth how individuals, as active learners, create the links. Botanic garden educators need to

give consideration to that finding and moreover plan accordingly their educational activities and interpretation means in order to communicate more effectively their conservation, environmental, sustainability messages. My suggestion is also supported by other researchers who have focused on the environmental issues communicated in the gardens and the impact on the visitors. For example, Oikawa's (2000) and Ballantyne *et al*'s. (2006) research stressed the need for botanic garden education to make more explicit the environmental messages for the different types of groups that are visiting. Oikawa (2000) argued that with the pedagogies or interpretation techniques the gardens are using, sustainability issues are underdeveloped, and Ballantyne *et al.* (2006) noted that the impact of botanic garden education on the visitors' environmental attitudes and behaviours is rather limited.

3.5. Research in outdoor education, museum education and environmental education in relation to learning

This part will focus on providing an overview of current research on learning in outdoor, museum and environmental education, identifying gaps in the literature, and narrowing down to research on the integration of learning in school with the outdoor experiences.

A research review on outdoor learning during fieldwork and outdoor visits, outdoor adventure education, and school grounds/community projects, Rickinson *et al.*(2004) pointed out that until the early 1990s there was a dominance of quantitative studies, which sought to evaluate the impacts of adventure programmes and field trips through pre-test/post-test designs. However, from the late 1990s there has been a greater number of qualitative and mixed methods studies, on topics such as students' expectations and experiences of different kinds of outdoor learning, and the variation in learning outcomes between different groups of learners. Rickinson *et al.* (2004) distinguished three categories of factors that can influence learning i.e. programme factors (structure, duration and pedagogy of outdoor education programmes), participant factors (characteristics, interests and preferences of learners), and place factors (the nature and novelty of the outdoor learning setting). Research indicates the value of programmes which (i) provide longer, more sustained outdoor experiences than is often provided; (ii) incorporate well-designed preparatory and follow-up work; (iii) use a range of carefully-structured learning activities and assessments linked to the school curriculum; (iv) recognise and emphasise the role of facilitation in the learning process and (v) develop

close links between programme aims and programme practices. Further UK based research was suggested by the review into a number of aspects of outdoor learning, including teachers' and outdoor educators' conceptions of the 'outdoor classroom' and the nature of the learning in outdoor education (Rickinson *et al.*, 2004).

Griffin's (2004) research review of school group visits to museums, and the nature of learning in these contexts, noted three key themes dominating the literature since the early 1990s, i.e. the overall educational value of the trips, the impact of preparing for field trips, and factors that influenced student learning. Specific interest in students' learning during field trips has grown tremendously in the past 10 years, and a major shift in the investigations of such learning in museums, has involved closer scrutiny of the learning of individual students within school groups, rather than viewing the group as a single entity. Research has increasingly incorporated a sociocultural perspective on learning, and there has been an increased emphasis on students' learning processes and how they can be facilitated, by taking into account students' views of their learning experiences, rather than just details of the field trip programme. Attention has been also paid to the different impact that the museum staff, the teacher and the students have on the learning. Research approaches that have emerged in the last decade comprise listening to adults and students in museums, understanding how students and teachers value and define learning, and crossing boundaries between schools and museums. Students in research in museum education have been regarded as active learners, and in respect to that, Griffin (2004, p.63) reported that 'young people are remarkably thoughtful and insightful about their own experiences and have clear ideas on how they would like to learn. Their views cover aspects of choice, social interactions, personal interests, and motivation'.

Having reviewed literature on museum – school collaborations and associated learning, it should be acknowledged that there is a much wider literature on school and external agency partnership and collaborations, including health-based or arts-based projects. For example, Burnard & Swann (2010) investigated pupils' experiences of learning during a school collaboration with musicians which lasted 18 months, and involved composing and performing activities in the school, and creative days at a range of off-site settings. The students identified three key factors for their experience of learning with artists: learning relations (i.e. the relationships that the students developed with the musicians which inspired learning), the emotional dimension, (i.e. the experience of working with artists involved being immersed in, and composing music using their own feelings and ideas), and the contexts for learning (i.e. the deliberately selected sites for the workshops at places that would inspire and support learning, such as churches, parks and other open

spaces). I have already examined other school – external agency collaborations in sections 3.2 and 3.3 (e.g. school – businesses partnerships) as they provided information that was lacking from environmental education research on the factors that militate in favour or against school and other organisations collaborations. In terms of learning, however, as I am particularly interested in environmental learning, I regard it as more pertinent to continue the review on what research within environmental and outdoor education has found.

A research review of learners and learning in environmental education (Rickinson, 2001), identified six main themes developed in the field: students' environmental knowledge, environmental attitudes and behaviours, environmental learning outcomes, which are well established, and also student's perceptions of nature, experiences of learning, and influences on adults, which are emerging research themes. In most of the environmental education research on learning, students are regarded as individuals who are to be altered through educational programmes, or young people whose environmental attitudes and knowledge need to be understood, in order that these can be more effectively changed through educational interventions. There are some examples of studies adopting a more active view of learners, particularly within the emerging themes (Rickinson, 2001). The passive view of learners which is predominant in most of the studies is in contrast to trends of environmental education more generally (Hart & Nolan, 1999). Also, much has been written about the impact of educational programmes in terms of predetermined learning outcomes but little about learners' experiences of and responses to these programmes (Rickinson, 2006).

The evidence on learning outcomes, shows that environmental education programmes (school based and outdoor education initiatives) can effect change in students' environmental attitudes, knowledge, and (in a few cases) behaviours. Effects, however, tend to be measured in the short term, and in most cases their durability over time is unclear. It is not well understood how, or why particular outcomes do, or do not occur, although there is some evidence to suggest that certain aspects of programmes are helpful in yielding positive impacts. These aspects include: programme duration in terms of week-long as opposed to shorter outdoor field courses, preparatory and follow-up work in connection with programmes at local zoos/museums, parental and community involvement with programmes, and authenticity of content in terms of dealing with actual, local environmental issues. There is also some evidence to suggest that learning outcomes can be facilitated by certain processes such as role modelling and direct experience aiding attitude change on outdoor courses, and collaborative group discussion

helping conceptual development in classroom lessons (Rickinson, 2001). Further research is suggested on understanding the process of learning, the learner's role within this process, and in particular the origins and development of students' environmental and educational perspectives (Rickinson, 2001; Rickinson, 2006; DiEnno & Hilton, 2005). Also, engaging with learning theories and developing new models of learning is another area that needs attention in research in environmental education, especially as in the past researchers failed to acknowledge those learning theories that underpinned their work, as Dillon (2003) suggests. Recently, researchers have devoted much time to researching learning and discussing the utility of various learning theories in researching museums, science centres and botanic gardens and environmental education field can be informed by that (ibid).

When starting research on learning experiences in a setting such as a botanic garden, it is important to know the educational possibilities that might be encountered. Dillon *et al.* (2005) identified different foci of outdoor education such as learning about nature, society, nature-society interactions, and oneself. Moreover, outdoor education can involve working with others, developing new skills, undertaking practical conservation, and influencing society. The intended outcomes of such experiences can encompass knowledge and understanding, attitudes and feelings, values and beliefs, activities or behaviours, personal development, and social development. Similarly, Scott & Gough (2003) identified 9 categories of interest which capture a range of different focuses and objectives of those who espouse and promote environmental learning (table 3-4). The categorisation allows considering how those interested in environmental learning have widely differing assumptions about purpose and process. Also, the categorization begins to clarify some of the foci that include nature, conservation and social change and desired outcomes that may include values and feeling, understanding, skills, behaviours, social justice and democratic citizenship skills, associated with research in environmental education.

Table 3-4 Categories of interest in environmental learning (Scott & Gough, 2003, p.54)

Categories of interest	**Focus and outcomes**
1.Those **interested in sharing the joy and fulfillment derived from nature** in order to bring about significant life-enhancing and life-changing experience for learners	**Nature** Values and feelings

Categories of interest	**Focus and outcomes**
2.Those **interested in the study of the processes of nature** in order to understand or to teach about them	**Nature** Understanding
3.Those **using nature as an heuristic to** foster the development of knowledge, understanding, skills and character which although situated are transferable to other contexts and through time	**Nature** Skills
4.Those **using the natural and/or built environment as heuristics** to achieve conservation and/or sustainability goals	**Conservation** Understanding
5.Those **advocating promoting individual behaviour changes** in order to achieve conservation/sustainability goals	**Conservation** Behaviours
6.Those **advocating/promoting particular modes of social change** in order to achieve environmental/conservation/ sustainability goals	**Social change** Social justice
7.Those **using environmental, conservation and/or sustainability issues as contexts** for the development of skills and knowledge related to the exercise of democratic social change	**Social change** Democratic citizenship skills
8.Those **promoting nature as a metaphor for a preferred social order** which may be cooperative or competitive according to worldview	**Social change** Values
9.Those **interested in the study of environmental learning** and environmental education itself	**Learning** Learning about learning

Taking into account that my research in botanic garden education is positioned at the interface between outdoor and environmental education and may encompass any of the above focuses identified in the literature, it should be noted that these focuses should be made explicit in the learning objectives of programmes, if they are to have any important impact on the learners. With regard to that point, a mixed method research project on the current state of outdoor education in Scotland, suggested that if outcomes related to nature are required from outdoor education programmes, then they may need to make

these an explicit focus of their work, making time for young people to reflect on experience, providing contexts and language for young people to express their feelings about nature, and speak of their more cognitive understandings of natural processes, and human-nature interactions (Mannion *et al.*, 2006). The research argues that

> outdoor education's main focus has been on the personal and social aspects of young people's development, though there is potential to harness it to address environmental concerns holistically, while at the same time addressing social and economic ones (ibid, p.15).

A qualitative research study on learning in outdoor contexts such as school grounds and gardens, farms, and field study/nature centres (Dillon *et al.*, 2005), developed a typology of different approaches to outdoor education, by identifying five different types of educational emphasis: the experience, the outdoor context, pedagogy, an integrating idea, and learning (see figure 3-4). The typology focuses on the relationship between experiences in the outdoor classroom, the learning that occurs, and the processes that enable such learning. It sets out different emphases that are possible within outdoor education, and how these affect what might be learned. The types although they are not fully discrete, can make distinctive contribution to the learning experience and they can be used by practitioners to develop and design appropriate approaches out of the classroom which can take different forms according to the varying patterns of need, interest, and context. The typology in that sense can contribute to the process of evaluating the importance of particular activities and programmes.

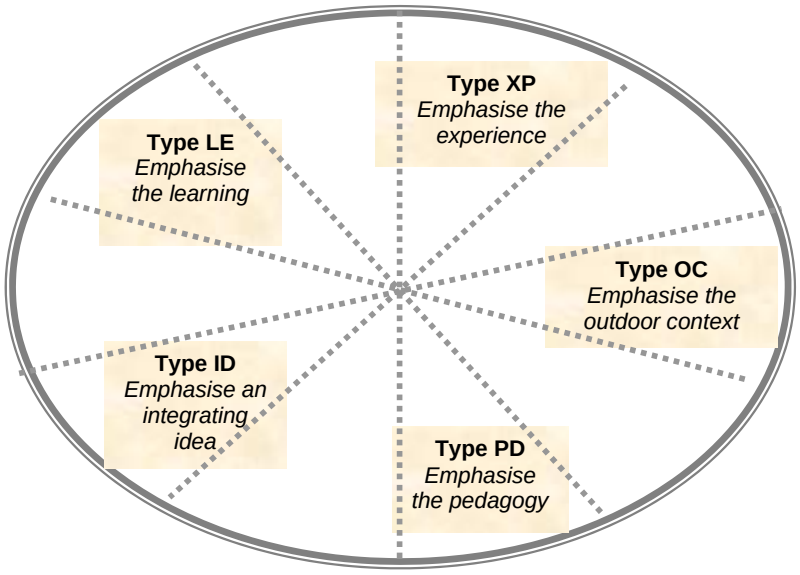

Figure 3-4 Types of educational emphasis related to outdoor education (Dillon *et al.*, 2005, p.4).

3.6. Links between experiences and knowledge in school with outdoor education opportunities, and other out of school sources of knowledge

Looking at the research on the relationship of outdoor education and in school learning (from both fields of environmental and outdoor education) I found three approaches:

- Research that focused on preparatory work in relation to the forthcoming pupils/students' outdoor experience (e.g. Orion & Hofstein, 1994; Anderson & Lucas (1997)
- Research that focused exclusively on the follow up work (e.g. Farmer & Wott, 1995)
- Research that examined outdoor education experiences in relation to both preparatory and follow up work (e.g. Ballantyne & Packer, 2002).

As far as methodological issues are concerned, the majority of research which investigates connections of in-school and out of-school (outdoor education) learning is quasi experimental, with pre-tests and post-tests (e.g. Ballantyne & Packer, 2002) measuring the effect of preparation and follow up work, usually entailing experimental designs with treatment and control groups to compare the effect of preparation and follow up work in relation to a field trip, as opposed to not providing pupils with that kind of teaching (Anderson & Lucas 1997; De White & Jacobson, 1994; Farmer & Wott, 1995). This research has shown that school based preparation and follow up work is important for enhancing pupil learning in relation to outdoor education experiences (including outdoor and environmental education programmes) (e.g. Ballantyne & Packer, 2002; De White & Jacobson, 1994; Dillon *et al.*, 2003). However, this kind of research methodology which focuses on the outcomes of interventions, does not provide evidence on the learning process and how pupils link their experiences together. In addition, there tend to be no investigations of teacher – educator interactions (apart from few examples such as the qualitative study of Dillon *et al.*, 2005), and how they can best collaborate in order to achieve links between learning in school and learning in the outdoor setting. Literature from both environmental and outdoor education fields has pointed out the need for more research on the relationship of indoor and outdoor learning (Rickinson *et al.*, 2004; Griffin, 2004; Kisiel, 2003; Dillon *et al.*, 2003).

According to the research evidence, an optimal learning experience for school fieldtrips would include pre-visit and follow-up activities, and teachers report that when they

organise fieldtrips they prioritise the links of the trip with the curriculum; however, in practice, teachers often do not do much preparation or follow up activities in class (Kisiel, 2003; Storksdieck, 2001; Anderson & Zhang, 2003; Tuckey, 1992). Kisiel (2003, p.4) characteristically argues that 'the blending of formal or classroom learning with the museum context, seems to be a troublesome pairing in practice'. Anderson & Zhang (2003) explain that teachers report that they prioritise the links with the curriculum when organising an outdoor experience because they need to secure the legitimacy and administrative authority to implement field trips, and that does not necessarily mean that they will follow up the fieldtrip with work at school afterwards.

In respect to the preparatory work before a fieldtrip, Orion & Hofstein (1994) pointed out that it should include activities which introduce the students to different aspects of fieldwork such as the cognitive (field trip concepts and skills), geographic (field trip setting), and psychological (field trip processes). For example, this research showed that the learning performance of students acquainted with the field trip location was significantly better than those not so familiar. Similarly, Anderson & Lucas (1997) stressed that the level of perceived novelty that students experience, affects the type of curiosity, behaviours, and the cognitive learning outcomes derived from a visit to an informal learning centre. Their research on student experiences in 'Queensland Sciencentre (sic) museum' in Australia indicated that students who had previously visited the museum, and had received the novelty reducing orientation activity at school, performed significantly better in the post-test than the other groups. The study suggested that high levels of novelty are likely to interfere with learning. On the other hand, Ballantyne & Packer's (2002) research on nature-based school trips in Australia, indicated that a balance between familiarity and novelty is important in preparing students for a field trip. Their research findings showed that those who had done pre-visit activities at school were looking forward to their visit more than those who had not, and those who had not visited the particular site before, were looking forward to their visit more than those who had.

In respect to linking an outdoor experience with a unit of work, Orion (1993) developed a three stage model (figure 3-5), according to which a field trip should be conducted early in the learning process, but not as the first learning activity. It should be preceded by a relatively short preparatory unit designed to decrease the novelty space factors, i.e. introduce students to the cognitive (field trip concepts and skills), geographic (field trip setting), and psychological (field trip processes) aspects of the fieldtrip. After the field trip, which is central part of the module, there is a summary unit introducing more

complex concepts, which demand higher abstraction ability. The model includes a learning spiral that ranges from the concrete to the abstract and is built of three parts. Each part is a structured independent learning unit, and at the same time, serves as a bridge to the next learning unit. Research by Orion & Hofstein (1994) on the factors that influence students' ability to learn during a geological field trip in a natural environment, suggested the effectiveness of the three stages model.

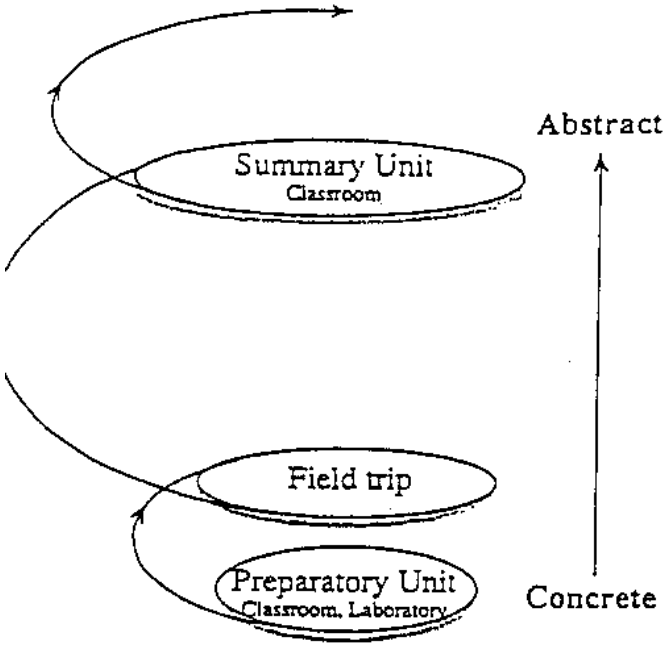

Figure 3-5 The three stages model for linking a field trip with school classroom activities (Orion, 1993, p.329)

Dillon *et al.*'s (2005, p.48) qualitative research on learning in outdoor contexts, pointed out challenges for curriculum integration which included:

- outdoor visits taking place after (rather than during) a related module of class work
- competing curriculum pressures limiting the opportunities for extended follow-up work
- students not seeing outdoor visits as connecting with their learning
- not all members of a class or a year group being able to take part in an outdoor visit
- certain kinds of activities being difficult to repeat in the school environment
- outdoor educators having few opportunities to support follow-up work in schools

- teachers wanting students to have a 'special experience' that is different from what usually happens in school.

Dillon *et al.* (2005, p.49) argued that 'it is short-sighted to try to increase the amount of time spent in the outdoor classroom without also seeking to maximise the extent to which such work is integrated with other work in schools'. The research also highlighted ways in which curriculum integration can be enhanced (ibid, p.49)

- school staff awareness and understanding about the outdoor learning sites and their provision
- outdoor educators' awareness and understanding about the school-based curriculum
- helping students to see outdoor visits as learning experiences connected to their school work
- school teachers' confidence and capacity to teach in outdoor contexts (both by themselves and with outdoor educators)
- the extent to which outdoor education is embedded in the routine expectations of a school year.

3.7. Problematising experience as a concept, and examining the implications for my research

As my research focuses on learners' experiences in environmental and outdoor education, before looking at the learning theories that can inform my research, it is important to look first at different ways that experience can be understood. There is a lack of theoretical understandings of experience as has recently been highlighted in the experiential education literature (Fox, 2008; Roberts, 2008) which draws on outdoor and environmental education research. Roberts (2008, p.21) argues that 'current scholarship seems to utilize a "common sense" notion of experience that ignores important distinctions, contradictions and conflicts embedded in the term'. Rather, experience might be seen as a complex, constructed reality, which is 'always already an interpretation and in need of an interpretation' (Fox, 2008, p.39). My research focuses on botanic gardens – school collaborations and the accruing of learning experiences. In this, the concept of experience should not be taken for granted as a homogenous and simple construction (Roberts, 2008), or as something concrete that can be understood or grasped through

individuals' reflections (Fenwick, 2001). For that reason, in what follows, I will unpack the concept of experience, identifying the implications for my research, and particularly examining how I might use the current theoretical understandings to look at my data.

As I have noted above, research in experiential education has tended to assume experience to be transparent and self evident through self-reports of tasks, activities or internal states, behavioural observations of others or evaluation of outcomes. Moreover, the common sense use of experience lacks a clear definition which creates a sense of consensus by attributing an assumed, stable and shared meaning. Fox (2008) calls for a move beyond self-reports of experience to include findings in neuroscience, psychology, and cultural studies. Research from these disciplines challenge this 'common sense' approach to experience and posits that other questions are as important as individual views on the meaning of experience. Fox (2008, p.41) attempts to capture all the above issues and describe the complexities of the term. Specifically:

> experience from an individual perspective is a complex interaction between body, sensory input, and neurological procession – a relationship with the world as humans encounter, interpret, and shape messages. Experience is a multilayered phenomenon: individuals make sense of experience through cultural, cognitive, subconscious, and personal interpretive layers, by negotiating norms and dominant values, attending to immediate human relationships, and through an individual's context within larger societal and historical positioning. These webs are interconnected with larger networks of culture, history, political economy and power. The process of 'having' and 'sharing' and experience involves verbal and nonverbal translation contextualised through culture, history, politics, and language.

One limitation of Fox's explanation of experience is the lack of consideration of how an individual's interpretation of experience may be different according to their age/maturity. Moreover, Burbules (2004) also argues that experience as an idea should not be taken for granted, or regarded as direct, since human beings interpret, analyse and personalise their experience. Fox (2008) adds to that argument that the relationship between experience and language/discourse is dialectical. Experience and its translation is a social activity, and not only a matter of individual significance. 'When individuals frame an experience they select, translate and interpret' (ibid, 49).

Burbules (2004, pp.166-167) proposes that the process of immersing in an experience is influenced by four main factors: interest, involvement, imagination, and interaction. In particular:

> An experience is interesting to us when it is complex enough to allow us to pick out new elements, even with repeated encounters... An experience is involving to us when we have a reason to care about what we are experiencing: we pay attention to it because it concerns us in some way… An experience engages our imagination when we can interpolate or extrapolate new details and add to the experience through our own contributions… An experience is interactive when it provides us with opportunities to participate in it, not only perceptually or intellectually but also through embodied action and responses.

Burbules' (2004) analysis of experience will inform the way I will look at and evaluate students' experiences when botanic garden and schools collaborate. However, I should point out that, as Burbules (2004) focuses on technology mediated experiences, he is particularly interested in how the individual interacts with their environment. I am equally interested, however, in the shared experiences of groups of students visiting botanic gardens and how they interact and influence each other's perception of, and immersion in, the experience. Imagine how different an experience would be for a child who visits the gardens on their own, and for a child who visits with their friends. That point does not imply that a solitary experience is a negative experience however, as it can have its advantages as well as disadvantages.

A rather comprehensive account of the possible nuances of experience, and the different philosophical positions underpinning each, is given by Roberts (2008, pp.21-31). Although his arguments are strongly influenced by U.S. experiential education theories and developments, I suggest that they are also highly relevant to the UK educational context. He distinguishes five categories:

1. The first variation of experience in education, *interactive experience*, draws from pragmatism philosophy, with Dewey being one of the main proponents. A key element of an educative experience for Dewey (1938) is that it must achieve a continuity in which the past and present interact to create the future, and the meaning of such interaction depends on the connections we make in the process (more of Dewey's theory will be explained in section 2.5). Experience is seen as relational and transactional, and is not located exclusively in the consciousness of the individual, but in the interplay between the individual and surrounding. Critiques of this approach point out that it assumes a kind

of homogenous community which does not exist in a world of structural and institutional inequalities.

2. The *embodied experience* approach is drawn from Romanticism and phenomenology. The focus is on individual meaning making and transformation. Added to romantic notions of experience as direct and transcendent, are the notions from phenomenology of how experience is embodied. Specifically, experience becomes real because we sense it and live through it. The sensorial experience is achieved through heightened awareness and is perceived as something special as opposed to something ordinary. Criticisms of that approach focus on whether any experience can be regarded as unmediated, and also, that the social construction of experience is ignored. Moreover, the approach is seen to overemphasise the value of experience as long as it is exotic while local, everyday experiences are disregarded.

3. The *experience as praxis* variation is drawn from critical theory, influenced by Freire's work. Experience is viewed in a more political sense, either as a tool for reproducing inequalities, or as a means of emancipation. For Freire, the central aim of education is to develop individuals' critical consciousness, to reveal structural and systemic inequality and instigate action. By deconstructing the assumed neutrality of experience, it is then employed towards acts of resistance and liberation. One of the main criticisms of that approach is that, in attempting to question the innocence and neutrality of experience, critical theorists often overemphasise narratives of oppression and power that devalue the potential of individual agency, and that makes it difficult for people to translate theory into practice.

4) *Neo-experiential education* is a more recent variation that is a growing trend especially in the U.S. educational system, and closely related to the neoliberal ideology. Drawing from Ritzer (1996) and Giroux (1999) the characteristics of this variation are its emphasis on efficiency, individual performance, and consumerism. Experience becomes something technical and instrumental, it is clearly demarcated in space and time, rationally constructed, and efficiently controlled. Normal school activity stops and experiential activity begins in a specific time frame. The means of experience become secondary to the dominating end of economy, efficiency and control. One of the main criticisms of this variation is that the organisation and purpose of schooling doesn't get questioned. The citizens produced under the neo-experiential variation are not equipped for participating in a democratic society but rather they are trained to obey what is set for them in the society, and trained to consume.

5) *Post experience education*, drawn from poststructural philosophy, critiques notions of authentic individual lived experience, and examines the central role of language in

mediating such experiences. This notion of experience has not yet been explored in a substantive way through the scholarship in experiential education.

Roberts' (2008) mapping of the nuances of experience will provide me with a tool to clarify my own assumptions of experience and what I see in my research. It is valuable in looking at participants' views on the experiences offered by the botanic garden – school collaborations, and especially for revealing the assumptions underpinning their perceptions of the experience. The second, equally important use of Roberts' (2008) categorisation of experience is that it gives me the opportunity to consider the different ways I can look at experience, and see whether one might be more appropriate in relation to my research questions. I am interested in the relationship of outdoor/out-of-school learning with the in-school/in-the class learning which takes place when botanic gardens collaborate with schools. I am particularly interested in how, and whether, environmental learning can be linked between the experiences in the school and in the garden. For that reason the interactive approach to experience based on the pragmatist philosophy seems to be most appropriate as it emphasises the importance of achieving a continuity of experience in education. Within that approach it makes sense to look at how the experiences in the garden and in the school interact[7], and how, and whether, because of the botanic garden – school collaborations learning in the gardens and learning in the school can be linked. Having explored the variations of our understanding of experience and the implications for my research, I will continue to present the learning theories that will inform my research.

3.8. Theoretical aspects of education in botanic gardens and other museums

Taking into account the relative lack of acknowledgement of learning theories that underpin research in environmental education, compared to the use and development of learning theories in museum and science education, as it has been highlighted by Dillon

[7] The term interactive experience implies 'experiences acting reciprocally or in close and/or continuing relation with each other' (the Oxford dictionary of English, www.oxfordreference.com)

(2003)[8], I will continue with presenting learning theories that apply to learning in outdoor education settings, which will be used for the data analysis of my research to explain pupils' learning experiences when visiting botanic gardens. Starting from experiential learning theory and constructivist views of learning, I will continue to sociocultural approaches, and the theory of 'communities of practice', to conclude with a framework on learning in museums which encompass the aforementioned theories. Although there is literature which distinguishes and finds incompatibility points between these theories, my perspective entails finding their convergent points, but also pointing out how each perspective in a way expands and evolves our view of learning.

3.8.1. Learning and experience

One of the greatest proponents of the central role of experience and learning was John Dewey. Dewey (1938) argues that it is not enough to insist upon the necessity of experience, but everything depends upon the quality of the experience which can be judged upon the immediate aspect of agreeableness or disagreeableness, and its influence upon later experiences. It is important for the educator to organise activities that will be enjoyable, will engage the pupils, and also experiences that will promote desirable future experiences. Dewey (1938) distinguished two fundamental, but intimately connected, principles in the constitution of experience, interaction and continuity. The principle that development of experience comes about through interaction, implies that education is essentially a social process. Experience does not occur in a vacuum but is emerging from sources outside an individual. The role of the educator is not only to be aware of how the conditions of the individual's environment influence the experience, but more importantly to utilise the surroundings, physical and social, so as to extract from them all that they have to contribute to building up worthwhile experiences (Dewey, 1938). The interactive and situated character of experience are interrelated.

> Experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment, whether the latter consists of persons with whom he is talking about some topic or event, or the toys with which he is playing, the book he is reading, or the materials of an

[8] According to Dillon (2003, p. 217) 'That (environmental education) researchers, particularly those engaged in empirical research, have failed to engage with learning theories to any depth is a concern and a weakness. Compare the situation in environmental education with that in science education, where learning theories are much more part of the discourse of significant numbers of researchers and the contrast is quite stark (see, for example, the *International Journal of Science Education*, the *Journal of Research in Science Teaching* and *Science Education*)'.

> experiment he is performing. The environment in other words is whatever conditions interact with personal needs, desires, purposes, and capacities to create the experience which is had (ibid, p.44).

The active role of the learner in the experience is also very important in the sense that the learner participates in the formation of the purposes which direct his activities in the learning process.

The principle of the continuity of experience, or what may be called the experiential continuum, 'means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after' (Dewey, 1938, p.35). The experience is both important for the time it happens for the individual, but it also acts as a preparation for future experiences. What the individual has learned in one situation becomes an instrument of understanding and dealing effectively with future situations. And that process continues as long as life and learning continue.

> A fully integrated personality exists only when successive experiences are integrated with one another. It can be built up only as a world of related objects is constructed. In relation to continuity and preparation, every experience should do something to prepare a person for later experiences of a deeper and more expansive quality and the most important attitude that can be formed from experiences is that of desire to go on learning (ibid, p.47).

Touching upon Dewey's theory, looking at experience and learning, one issue that should also be clarified is the relationship of the two concepts which can easily be overlooked or taken for granted. For instance, in the following sections 3.8.5 and 3.8.6 of the thesis, two frameworks will be presented, one that focuses on environmental learning in formal education settings i.e. schools and university classrooms (Rickinson *et al.*, 2009), and one that focuses on free-choice learning in museums (Falk & Dierking, 2000). In both frameworks, although the authors use the term 'learning experience' extensively, they do not explain whether they regard all experiences as learning experiences, or how an experience is transformed into learning. In some cases it is even assumed that experience equals learning; Falk & Dierking (2000, p. 10) state: 'Learning is not some abstract experience that can be isolated in a test tube or laboratory, but an organic, integrated experience that happens in the real world'. However, there are authors who suggest that experience does not necessarily involve or lead to learning (e.g. Pearson & Smith, 1985; Boud *et al.*, 1993). Boud *et al*. (1993, p. 9) argue that 'reflection consists of those processes in which learners engage to recapture, notice and re-evaluate their experience,

to work with their experience to turn it into learning'. Mezirow (1990) also suggests that learning involves making sense of an experience or else making an interpretation of it and, along the same lines, Heimlich & Falk (2009, p.13) present their view on the relationship of experience and learning:

> It becomes increasingly appreciated that learning occurs through a process of assimilating experiences and the building of new knowledge structures; learning is a continuous process of constructing meaning out of prior and new knowledge.

Moreover, I found it useful to adopt Stewart's (2003) explanation of a learning experience (her doctoral thesis has been also in learning in botanic gardens). Specifically, Stewart (2003, p.49) explains that for an experience to be termed a learning experience:

- The experience must be relevant to a student's previous and future learning
- Students must be actively involved in their learning
- Students enjoy and are motivated by the learning experience.

3.8.2. Piaget and the construction of knowledge

Piaget as one of the main advocates of constructivism, along with his antecedents (e.g. Dewey) and those who followed (e.g. Bruner, Vygotsky) proposed that children actively construct knowledge, that this knowledge is constructed in a social context (Zuckerman, 2003), and that the educator should emphasise students' intrinsic motivation toward learning (Wadsworth, 1978). Constructivist learning theory can be summarized by understanding that each student comes to class with his or her own assumptions about how the world works – i.e. each student enters a learning situation with a complex cluster of ideas, beliefs, values, and emotions – thus, for knowledge to be retained, it needs to be presented in a way that fits this new knowledge into the students' existing worldview (DiEnno & Hilton, 2005; Robertson, 1994). That view of learning contrasted previous behaviourist approaches, according to which knowledge is simply transmitted from expert to novice, and individuals are regarded as passive individuals who accumulate knowledge conveyed by the teacher (Linn, 1987).

One of the important contributions of Piaget in terms of understanding the learning process, is his description of a child's intellectual growth as a set of organised structures, or schemes; as the individual encounters the world, they assimilate objects and events to these structures (thus they function and expand without structural change); when this is

not possible because the existing structures are inadequate, they modify themselves or accommodate (thus they undergo structural changes). For Piaget the growth of the intellect, rather than something that happens to the child from the outside, it is a process of self-construction which comprises assimilation and accommodation. When we assimilate, we interpret the external world in terms of our current schemes or presently available way of thinking about things, building additional understanding and reinforcing known things (Piaget & Inhelder, 1969). Most of the time, learning appears to be a process of reaffirmation and assimilation and more rarely it involves accommodation, a reconstruction of prior knowledge, which means new ways of seeing, feeling, and thinking about knowledge. However, historical models of learning have been predicated on the assumption that real learning is the measurable change in understanding, which comes about through accommodation rather than the more subtle reinforcement of pre-existing known things (Falk & Dierking, 2000).

3.8.3. Sociocultural approach to learning

While Piaget's starting point of his theory is the individual, Vygotsky focuses on the social base of the mind (Rogoff, 1999). Vygotsky, one of the main proponents of the sociocultural approaches to learning, argues that the most fundamental aspects of learning, including perception, processing, and meaning-making, are socioculturally constructed. Individual cognition develops as a result of interactions in the social life of the individual, hence, in order to understand the individual one must first understand the individual's social relationships (Vygotsky, 1978). All learning is built upon previous learning, not just of the individual, but of the entire society in which the individual lives. The words, concepts and also the artifacts we use in our everyday lives are historical legacies of our society/culture which we are given as tools to build a life and Ogbu (1995) identifies them as cultural product. Vygotsky was interested in the role of the social environment, including tools and cultural objects, as well as people, as agents in developing thinking (Rogoff, 1999).

Children's learning was characteristically described as taking place within the 'zone of proximal development' (Vygotsky, 1978, p.86) which is the 'the distance between the actual developmental level (of a child) as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers'. In other words, tasks that

children cannot perform on their own but which they can achieve with help from others, invoke mental functions that are currently in the process of developing, rather than those that already have matured (Vygotsky, 1934). The process of the adults or more skilled peers assisting the child, a social mediation process, was called scaffolding. Hogan (2002) explained scaffolding as the process whereby experts provide novices with support to function at the leading edge of their capabilities, and thereby help them accomplish tasks that they would be unable to accomplish on their own. This style of interaction requires making careful diagnoses of students' capabilities, and constantly adjusting tasks and assistance levels to help them achieve success. One key practice is the strategic fading of support by recognizing the points at which learners can proceed on their own (Hogan, 2002).

Vygotsky's work on the interdependence of individual and social processes in children's meaning-making, provides an important foundation for developing teaching-learning environments that value the whole child and respect different cultures, languages, prior experiences, and learning styles that children take to the classroom (Holbrook, 2003).

3.8.4. Situated learning and communities of practice

While classical sociocultural theory specifies how experts can scaffold the development of novices, situated learning theory emphasizes the importance of interactions within a community of practice (Hogan, 2002). Moreover, situated learning theory suggests that all learning occurs within a context referred to as 'a community of learners' or communities of practice', and extends Vygotsky's ideas beyond the small groups of individuals, to larger groups (Lave & Wenger, 1991).

Lave & Wenger (1991, p.35), key proponents of the idea of situated cognition, argue:

> In our view, learning is not merely situated in practice—as if it were some independently reifiable process that just happened to be located somewhere; learning is an integral part of generative social practice in the lived-in world.

Lave (1991) argues that learning is actually the process of becoming a member of a sustained community of practice, and suggests that legitimate peripheral participation in communities of practice is the critical driving force for learning. Learners inevitably participate in communities of practitioners, and the mastery of knowledge and skill

requires newcomers to move toward full participation in the sociocultural practices of a community. Learning is regarded as a process of gaining competency as a participant in the social contexts in which knowledge is generated and used. Such participation allows newcomers to a community of practice to adopt that community's norms and ways of thinking, talking, and acting (Lave & Wenger, 1991). The concept of legitimate peripheral participation as a learning process stems from the concept of apprenticeship and thinking about even life as apprenticeship. Also peripherality suggests an opening, a way of gaining access to sources for understanding through growing involvement. Viewing learning as legitimate peripheral participation means that learning is not merely a condition for membership, but is itself an evolving form of membership. Rather than defining learning as the acquisition of propositional knowledge, Lave & Wenger (1991) situate learning in certain forms of social co-participation. Rather than asking what kinds of cognitive processes and conceptual structures are involved, they ask what kinds of social engagements provide the proper context for learning to take place.

Learning, according to Lave and Wenger (1991), takes place in a participation framework, not in an individual mind. The term community does not imply necessarily co-presence, a well defined indentifiable group or socially visible boundaries. It does imply participation in an activity system, however, within which participants share understandings concerning what they are doing, and what that means in their lives and for their communities (Lave & Wenger, 1991). Knowledge, for Wenger, is inseparable from practice, and it is integrated into the life of the community of practice where members share values, beliefs, language and the way they do things. The members of a community of practice are virtually connected in a collaborative network where they interact, reflect and have common experiences, aimed towards a shared purpose. The central purpose of education from a situated learning perspective is to give students a sense of their possible trajectories in various communities of practice, through which they can explore their current and possible identities (Wenger, 1998).

3.8.5. The Contextual Model of Learning

An example of how the above theories have been used, and in a way adopted and adapted to explain learning in outdoor education settings, is Falk and Dierking's (2000) 'Contextual Model of Learning' (figure 3-6). The model which focuses on how learning takes place in museums, draws from constructivist, cognitive, as well as sociocultural

theories of learning, and posits that all learning is situated within a series of contexts, and in particular influenced by three overlapping contexts: the personal, the sociocultural, and the physical. Learning can thus be conceptualized as the integration and interaction of these three contexts within which specific factors that influence learning can be identified as follows:

The personal context represents the personal and genetic history that an individual carries with him/her into a learning situation. From the personal context perspective one should expect learning to be influenced by:
(a) Motivation and expectations
(b) Prior knowledge, interests, and beliefs
(c) Choice and control.

The underlying assumption of the social context, is that humans are extremely social in culture and hence, one should expect museums (and other forms of informal learning) always to be socio-culturally situated. Learning, according to this context, is influenced by:
(d) Within-group socio-cultural mediation
(e) Facilitated mediation by others

The physical context represents the assumption that learning, which occurs within the physical environment, is in fact, always a dialogue with the environment. Thus, learning is influenced by the following environment components:
(f) Advance organizers and orientation
(g) Design
(h) Reinforcing events and experiences outside the museum

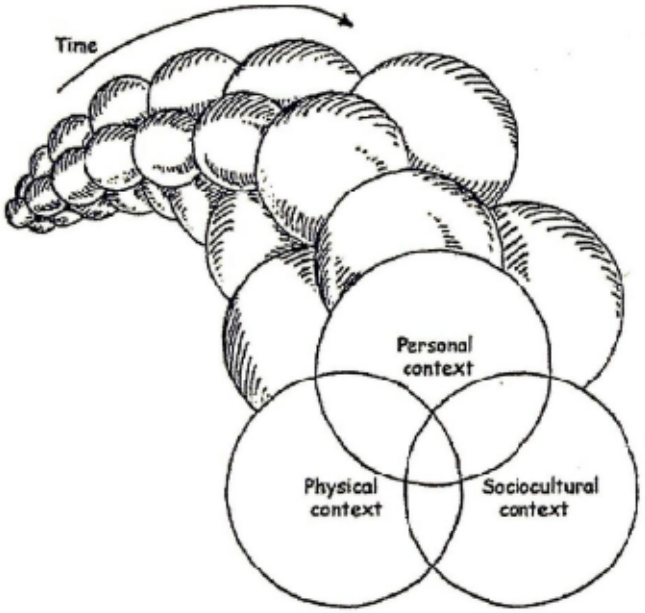

Figure 3-6 The Contextual Model of Learning (Falk & Dierking, 2000, p.12)

The model also takes into account time, suggesting that learning is being constructed over time as the individual moves through his sociocutural and physical world. Falk & Dierking (2000, p.12) explain:

> Over time meaning is built up. All learning is a cumulative long term process, a process of making meaning and finding connections. What we know about any particular topic is the accumulated understanding constructed from a wide variety of sources, typically including school, newspapers and magazines, books, conversations with friends, family, and knowledgeable acquaintances, television shows, films, observations in the world and often museums. People do not learn things in one moment in time, but over time. Thus you can neither expect to share knowledge or beliefs or feelings or capabilities in one moment in time, nor can you expect to be able to document that knowledge, belief, feeling, or capability as if it were constructed in one moment in time.

Factors should not be regarded as acting in isolation. For example, an individual's motivations, interests and prior museum experiences all combine to create expectations for the visit. Falk & Dierking (2000) suggest that these factors comprise the 'visitor's agenda' which influences visitor's behaviour and learning. The factors do not only act together, but also interact with each other within and across contexts influencing successful learning in museums. For instance, within the personal context, the way the visitor chooses and controls what to focus their attention on in the museum is determined in a great degree by their previous experiences, interests and motivations. Also,

examining the relationships of the factors across contexts, the factor 'within-group socio-cultural mediation' (sociocultural context) can be seen in connection with the factor 'prior knowledge, interests, and beliefs' (personal context); i.e. many families consider museums as settings where they can learn together, and they spend the majority of their time talking to each other, sharing what they know and trying to find more. At the same time this communal experience is facilitated by the fact that each member of the family brings their previous experiences, knowledge, interests to their discussion of the exhibition and programmes in terms of these individual experiences and memories (ibid).

Learning that occurs during the collaboration of botanic gardens or other outdoor education settings with schools, can be conceptualised using Falk & Dierking's (2000) contextual model. In particular, pupils' learning during the botanic garden-school collaborations can be located at the interface between the personal, sociocultural and physical context of Falk & Dierking's (2000) model, taking also into account that learning develops over time. The different contexts and the time, can be regarded as factors that influence learning. For example, in the case of pupils' learning during the botanic garden-school collaborations, the personal context suggests the background of knowledge and experience pupils bring before visiting the gardens. The sociocultural context refers to the mediation that pupils are provided by the educators in the gardens and also by their colleagues and their teachers who accompany them. The quality and level of mediation is highly dependent on the level of collaboration between the gardens and the school. The physical context refers to the fact that the pupils visit somewhere different from the school classroom environment, the gardens, which provides experiential learning opportunities designed (usually) by teachers and educators in collaboration. In addition, the learning is not static but depends on the time factor. When a long-term school-garden collaboration is established, pupils' learning may develop and become reinforced in consecutive experiences in the gardens.

The Contextual Model of Learning, however, could not be applied uncritically to my research. Specifically, the model has been developed based on an exploration of free-choice learning in museums. The term 'free-choice learning' is used to 'refer to the type of learning that occurs when individuals exercise significant choice and control over their learning. It refers to the type of self-directed learning that regularly occurs in settings like national parks, natural history museums, zoos and aquariums, and through the use of print and electronic media, including the media' (Falk, 2005, p.270). The term has been invented in order to focus attention on to the learner's perspective of the available educational opportunities in contrast to terms such as formal, nonformal and informal

learning[9]. Heimlick & Falk (2009, p.21) clarify that when 'children in school groups take field trips where there is a predefined and highly structured lesson with limited or no choice or control over goals and activities, this is not free-choice learning'. It is apparent that the learning I am aiming to investigate is occurring within highly structured activities and predetermined desired outcomes arrived at through the botanic garden – school collaboration, so it is not free-choice learning.

Falk & Dierking (2000) suggest that the overall framework they provide can work well across a range of learning situations, compulsory as well, so the question that arises is in what ways the model may not work, or may need some adjustment to be meaningful when investigating learning that occurs when botanic gardens and school collaborate. As I explained above I still find highly relevant all the factors that comprise the Contextual Model of Learning. However, I do not expect the factor 'choice and control' (personal context) to have strong influence in my research simply because the students' experiences are structured and determined by the teachers and educators. However, it can still be valuable to look at whether, within the structured activities in the botanic garden, incidental, self-directed learning may happen, how it happens, and what implications there are for botanic garden – school collaborations. Also, two other strong factors that should be added to the model, within the sociocultural context, is the pedagogy/instruction methods used by the educators, and the content of the teaching. The way the educators teach the students, and what they teach, is expected to influence what the students get from the experiences in the gardens, but it should not be taken for granted that what students are taught is what they actually learn.

Furthermore, in terms of free-choice learning Ardoin (2009) argues that the learners' motivation when they visit settings such as museums, parks, and botanic gardens influence what they gain from the experience and subsequently whether they undertake behaviours motivated by the experience. What Ardoin points out in terms of individual motivation is relevant to my research, however the effect of that factor in terms of what the students learn in the garden should be seen in interaction with what is taught, by whom, and how. Ardoin (2009, p.63) goes on to explain that a free-choice learning event may be one in a series of loosely linked experiences around the same topic, or it may even be isolated and not likely to be reinforced by similar experiences. For these reasons

[9] The term formal has been used to 'refer to school and university based education and by extension the learning that occurs there. The term nonformal or informal has been used to refer to the types of education (learning) that occurs outside these settings' (Falk, 2005, p. 270).

behavioural models that apply to free-choice learning may be 'different from those appropriate in formal education settings where learning and teaching are sequential and sustained'. In particular, 'behavioural models that require learners to follow a particular path, practice certain skills, and engage in directed actions are often not appropriate for or applicable to these more fluid learning situations. Because of the nature of free-choice learning, behavioural models that rely on lengthy and repeated exposure to shift attitudes and values as well as increased knowledge may not be effective in those settings' (ibid, p.69). I have already clarified that my research focus is not on free-choice learning but in learning that occurs around structured activities planned and implemented by the botanic gardens and schools. Notwithstanding this, however, learning during school visits to botanic gardens may also be of short duration and episodic in nature, representing a small portion of students' opportunities for learning as opposed to the long-term, sustained 'captive' learning, which frequently can take place in formal education settings' (ibid, p.69). Realising that an isolated experience in the gardens can have limited impact on the students' lives, one of my research questions arose which focuses on how are pupils' environmental learning experiences in botanic gardens and local schools shaped through their collaboration. In doing so I aim to look at how learning in the gardens can be linked with learning in the school, and how the collaboration of the botanic garden with the schools can achieve that connection.

Barron (2006) also looked at the relationship of learning and experiences in and out of school and focused attention on the role of interest. Falk & Dierking (2000, p. 23) explain that this does not refer only to what someone likes or dislikes. Rather, interest should be regarded as a:

> psychological construct that includes attention, persistence in a task, and continued curiosity, all factors important to an understanding of what might motivate someone to learn in a museum, to become fully engaged in a museum exhibition, program or event.

Interest can be also regarded as a filter through which we selectively determine what to attend to and what to ignore from an abundance of information (ibid). Barron (2006), along the same lines as Falk & Dierking and the free-choice learning concept, speaks of self-directed/self-initiated learning and suggests changing the school-centric focus to 'consider the broader life spheres of an individual and how learning in schools lead to the independent pursuit of knowledge once the formal course is over' (ibid, p.195). By investigating adolescents' self-directed learning and the role of interest in pursuing

further learning, Barron (2006) developed the *Learning ecology framework*. Learning ecology is defined as the set of contexts found in physical or virtual spaces that provide opportunities for learning (Barron, 2004). According to the *Learning ecology framework*, adolescents are simultaneously involved in many settings and they are active in creating activity contexts for themselves within and across settings. Barron (2006) identified different pathways for the development of interest and knowledge which involve adolescents pursuing further learning outside school. For example, interest may first arise at school and then the adolescent carries this interest to home and community contexts. In other cases, the origins of interest can be located during informal learning activity with friends, and continues through pursuing further related knowledge in school. The *Learning ecology framework* is based on three conjectures that explain the role of interest in self-directed learning (ibid):

[i] The first conjecture, the emergence of interest, explains that interest can develop in different contexts: home, school, in informal activities with friends, informal education settings. Friends, parents and teachers are considered as resources that contribute to the emergence of interest in the different contexts.

[ii] The second conjecture, the creation of learning opportunities, explains that once that interest is sparked a variety of strategies might be employed to further learning. Five strategies are identified: finding text-based informational sources, the creation of new informal activity contexts, exploration of media, the pursuit of formal or structured learning opportunities, and the development of knowledge networks such as mentoring relationships. More than one strategy can be used at the same time to extend learning. We should think more broadly about learning and actively consider the interconnections and complex relations between formal learning experiences provided by schools, and the informal learning experiences that students encounter in contexts out of school.

[iii] The third conjecture, boundary crossing and bi-directional influence, explains that learning is distributed across activities and resources, between different contexts (e.g. home and school), and there is bi-directional flow of knowledge between the contexts. For example, a student may develop their interest in a topic in school, discuss this learning with family, getting more information, and then come back to school and choose a specific class on the same topic based on their family guidance and information (ibid).

Barron (2006) provides a more in-depth account of the role of interest in pursuing further learning, a factor that Falk & Dierking (2000) identified within the personal context of the Contextual Model of Learning. Barron (2006) also explains how interest emerges and develops, and contributes subsequently to the pursuit of further learning. I find Barron's arguments relevant to my research, but I am also aware of limitations to the extent to

which the *Learning ecology framework* can be applied to my research. In particular, I understand that, in order to employ the framework in learning in botanic gardens, a narrative inquiry methodology which would entail in-depth interviews with individual students would be appropriate to give me data comparable to Barron's research. In addition, my research focuses on primary school students who may not be as confident or as mature as the adolescents with whom Barron worked, or able to pursue their further learning to the same extent that adolescents can, and who may not be able to express explicitly how they follow their interest across different settings and contexts. Also, importantly, as I explained in relation to Falk & Dierking's framework, my research focuses on the learning that accrues from the collaboration of botanic gardens and schools, and such activities do not provide much choice and control to students to pursue their own learning. Interest still influences what students learn within the structured activities, and, as Barron pointed out, the experiences in school or in the gardens may spark students' interest to pursue further learning through other resources and settings/context.

Having explored frameworks related to free-choice and self-directed learning that apply to learning in museums, learning between museums and schools, and learning between schools and families etc., I will continue with a framework that focuses more directly in learning in environmental education.

3.8.6. Lenses for understanding environmental learning

Rickinson *et al.* (2009), aiming to address the gap in research and theory on the process of learning in environmental education, combined three research projects which focused on different key interests i.e. i) emotions and values in learning, ii) students' conceptions of relevance in environmental education, and iii) difference in viewpoints and relations between teachers and students in environmental education. By conducting secondary data analysis on their findings across the separate studies, they developed three lenses, as an interpretive tool to look at, or for, different aspects of environmental learning. Each lens points to a series of questions, or lines of inquiry that concentrate thinking on certain issues. Figure 3-7 presents which questions are crucial to ask when looking at environmental learning through each lens. The lenses do not account for all aspects of environmental learning, and do not make generalisable claims; they, rather, offer different vantage points from which to make sense of environmental learning. Other lenses might

be created to make sense of more formalised environmental learning in different and equally valid ways. In addition, Rickinson *et al.* (2009) focus their analysis on how students, as active learners, make sense of, and respond to, learning focused on environmental issues in schools and universities. In more detail:

1.The lens 'the role of emotions and values' suggests looking at students' emotions and values as part of the learning process (e.g. students' distaste and discomfort with particular activities), and also at how students' perceptions of environmental subject matter (e.g. if they see the content of learning as value-laden) can affect their learning.

2. The lens 'issues of relevance' suggests looking at whether environmental learning is conceived as relevant to students' lives in the present or future, and also, whether students perceive environmental learning as relevant to the curricular context.

3.The lens 'differing viewpoints among students and teacher' suggests looking at environmental learning in terms of the interactions between the viewpoints of students and the viewpoints of teachers. Differing viewpoints that have been identified concern specific environmental issues, what is topical or controversial, what is relevant for a specific curriculum subject, and the nature and value of empathy tasks (e.g. role plays).

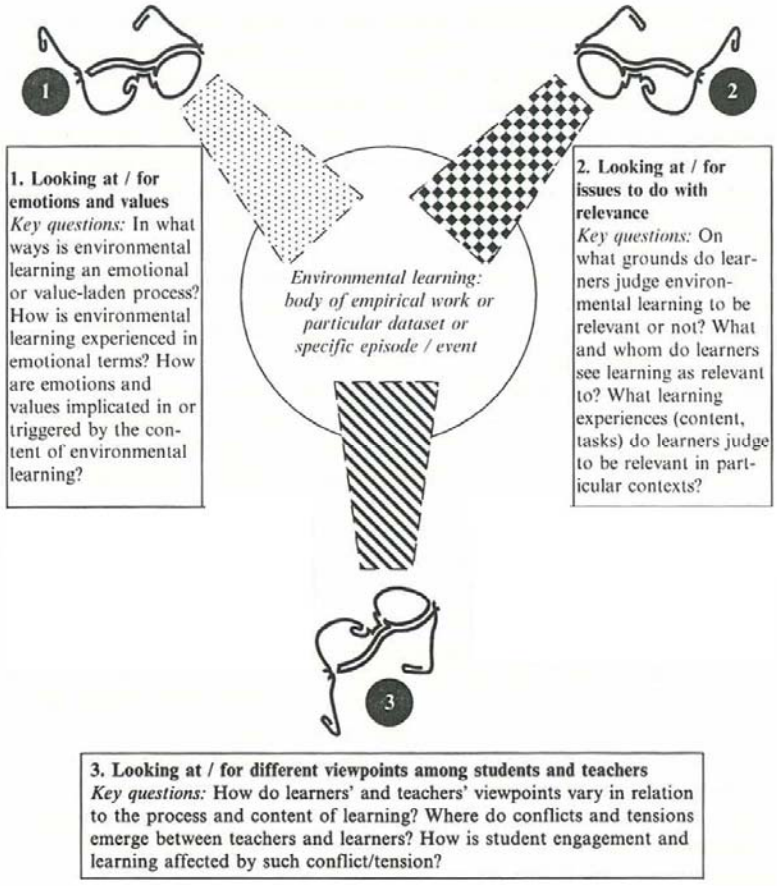

Figure 3-7 Lenses for understanding environmental learning (Rickinson *et al.*, 2009, p.44).

The lenses should not be regarded as isolated or separate from each other; there is a considerable overlap of the issues they are pointing our attention to. For example, learners have expressed their engagement in activities where they find the content relevant to their lives in the present or in the future, including issues that they care about, that are relevant to their values. Lisa, a participant in Hopwood's study said that environmental learning in the school classroom is most relevant to her when 'it addresses issues of human impacts on the natural environment, something that [she feels] strongly about' (Rickinson *et al.,* 2009, p.65). In that sense the lens looking at 'issues of relevance' overlaps with the lens looking at 'the role of emotions and values'.

The lenses apply mainly in formal education settings e.g. schools, universities. When looking at environmental learning in informal education settings such as botanic gardens, other lenses may be more powerful or equally important. For example, a lens that turns our attention to the physical context where learning takes place, or a lens on social learning that looks at how learning is different when we learn together with other people.

However, although Rickinson *et al.* (2009) explain in a thorough, comprehensive way the different meaning that environmental learning may encompass, they do not offer though a similar analysis of the ways we conceptualise experience or say what assumptions underlie our perceptions of experience. They only clarify that they adopt Erickson & Shultz's (1992, in Rickinson *et al.*, 2009, p.4) approach of looking at the 'subjective experience of students as they are engaged in learning'. It seems as if there is an uncritical assumption that all experience leads to learning, or at least there is no explanation as to when experience becomes learning (see Boud et al., 1993 for more discussion on that issue). However, more can be learned by acknowledging different ways that experience can be conceptualised in relation to different epistemological assumptions, an issue that I have explored in section 3.7. In addition, the lenses suggest looking at how students get or do not get engaged in environmental learning experiences based on emotions and values, the relevance of the activities and the differing viewpoints between students and teachers. There are other ways that an experience can be explored, as well. For example, Burbules (2004) has proposed looking at how the learners get immersed in an experience based on how interesting, involving, interactive the experience is, and how it engages our imagination.

My research entails looking at the learners' experiences when botanic gardens collaborate with schools and how learning may be linked between pupils' experiences in school and in the gardens. Although Rickinson *et al.'s* lenses have been developed based on looking

at environmental learning in formal education settings, they have pointed out the potential of the lenses for use in understanding learning in outdoor education settings as well. I find the idea of the lenses and the issues they draw attention to as a useful research tool which I intend to use albeit with caution so that I will still take into consideration other issues and factors that in an outdoor education environment can have a strong impact on students' perspectives on their learning experience. For example, in terms of students' emotions and values as part of the learning process, I expect that the outdoor environment, i.e. the physical context, will have a strong impact on stimulating students' emotions as part of the learning process. The lens of relevance can be meaningful in two ways. Whether the students feel that their experiences in the gardens are relevant to themselves, and whether they feel that they are relevant to the school curriculum. Lastly, it will be interesting to look at differing viewpoints among students and teachers and educators for example on what activities in the gardens are most worthwhile for the pupils. I should also acknowledge that I intend to use Rickinson *et al.*'s findings and the lenses they developed with caution in my research as the age of my research participants is different, and the depth in which primary school students analyse their experiences is likely to be different from the secondary school and university students who were participating in Rickinson *et al.'s* research. Also, the duration of the activities the pupils are engaged in the gardens is significantly less than the activities Rickinson *et al.* investigated, and the nature of learning in the outdoor environment is influenced by additional factors that are not present in the class environment.

3.8.7. Behavioural change issues in education in botanic gardens and other environmental outdoor education settings.

Having presented the learning theories that are relevant to the educational experiences in botanic gardens and other outdoor education settings, I will now address theoretical issues in relation to learning and behavioural change, as education in botanic gardens may well include outcomes that aim at encouraging pro-environmental behaviours. Heimlich & Ardoin's (2008) literature review provides an overview of environmental psychology theories that explain behaviour and can be applicable to environmental and conservation education that aims at behaviour change. Heimlich & Ardoin (2008) point out that many environmental educators make the mistake of focusing specifically on the behavioural outcomes rather than the steps required to reach those outcomes. They also suggest that in order to change behaviours we must consider each of the individual behaviours and

actions that add up to the larger environmental behaviour we encourage people to undertake. By breaking down large behaviours into habits, tasks and skills, change becomes feasible. Taking into consideration that few behaviours are isolated and conscious, and most are embedded in patterns and routines that become automatic and fixed and comprise a series of habits, the challenge then for educators seeking behaviour change is not to change the behaviour, but rather to change the routine that exists around that behaviour. Teaching skills can be one of the ways to change behaviour, and can involve interrupting one routine of behaviour, and replacing old skills that occur within that routine with new skills. Those new skills must be embedded in a modified or new routine.

Some of the behaviours promoted by conservation/environmental education may appear to fit into the casuistic behaviours category which are default actions supported by social norms, and are often considered subconscious, operating in a routine. Although it may seem that environmental educators want conservation actions to become casuistic, or automatic and socially reinforced, environmental education also encourages critical thinking, which can run contrary to the subconscious aspect of casuistic behaviors. With critical thinking, we desire behaviours to be post-conscious which means that one's actions should be conscious enough that individuals are able to identify a behaviour that can or should change when situation or circumstances change (Heimlich & Ardoin, 2008). Moreover, Ardoin (2009) points out the limitation of free-choice learning in terms of achieving sustained impact on the individuals, as it is episodic and short-term, and questions the appropriateness of applying behavioural change theories to learning in settings with a conservation focus such as zoos, botanic gardens, aquariums; as an alternative to achieving their conservation goals, Ardoin even suggests these organisations to focus, or at least think of reorienting their resources to changing policies that may have more immediate results, rather than focusing on environmental education with the intention of affecting behaviors which as a strategy is even difficult to assess.

Another issue in relation to behavioural change in environmental education is the role of changing attitudes. In particular, Kollmuss & Ageyman (2002) highlighted that the assumption that a linear relationship exists between knowledge, attitudes and action is largely a false one. Research has shown that 'in most cases, increases in knowledge and awareness did not lead to pro-environmental behaviour' (Kollmuss & Agyeman, 2002, p. 241). Various authors have tried to explain the factors that are important to change the attitude behaviour relationship. For example, Bell *et al.* (1996 in Heimlich & Ardoin, 2008) point out as important factors a) the attitude specificity according to which specific

attitudes toward particular problems do have predictive value, b) the normative influences or the social pressures around certain attitudes, and c) the attitude accessibility, or the frequence with which an individual is given the opportunity to express and act upon an attitude. Kollmuss & Ageyman (2002) distinguish between external factors i.e. institutional factors, economic factors and social and cultural norms, and internal factors i.e. motivation to act pro-environmentally, environmental knowledge, values and attitudes, environmental awareness, emotional involvement, locus of control, and responsibility and priorities.

Although research in environmental education has consistently challenged the linear causality of affect and knowledge leading to behavior, in practice many environmental programmes continue to be based on that assumption and focus on general environmental literacy (see Hungerford & Volk, 1990; Kollmuss & Ageyman, 2002; Heimlich & Ardoin, 2008). However, Heimlick & Ardoin (2008, p.22) suggest:

> we know that specific pro-environmental attitudes based on specific relationships with the environment or an environmental issue, building on already developed self-esteem and locus of control, and requiring mastered skis are most effective in promoting behavior change. Therefore, focusing on developing skills that build on pro-environmental attitudes is critical step toward changing or reinforcing behaviors.

Also, they argue that (ibid, p.231)

> if environmental education is to produce a citizenry capable of making sound decisions and acting on those decisions in a way that is environmental and personally sustainable, it is imperative that the field avoids unilateral assumptions. It is necessary to understand that related to behaviours individuals are not all alike. They are not all motivated by the same things, nor are they equally capable of altering routines.

Another issue that needs to be mentioned is that assessing the impact of free-choice learning initiatives on behaviour is difficult. Behaviour change when affected through education, usually takes place over a lengthy period of time. A conservation-related educational program at a zoo for example, may not lead to immediate changes in an individual's behaviour, but rather prepare the individual to

> make adaptive decisions over a course of a lifetime. While a learning event may mark a watershed moment in an individual's life, it more likely represents one in a series of cumulative events that may affect knowledge, attitude and skills,

> which have the potential to eventually link with changes in behaviour (Ardoin, 2009, p.70).

The point made on the impact of free-choice learning applies also for learning within structured activities in botanic gardens. I do intend to inquire whether my research participants perceive that their experiences in the gardens have any impact in their environmental behaviours. I also need to be cautious that neither they may be able to identify the changes immediately after the experiences, and also, that it is difficult to assess whether the changes can be attributed to the experiences in the gardens or to other influences such as from school, family, etc. as Ardoin (2009) stresses.

Heimlich & Ardoin (2008) provide a comprehensive literature review on theories that explain behavioural change. The review is meaningful for environmental education (both formal and informal sector) as it provides evidence and explanation to practitioners of the factors that they should be aware of when aiming to change individuals' behaviour towards the environment. One of the limitations of the review is that it assumes that the theories can be applied to individuals of all ages. More could learned, if there were a distinction or at least clarification whether it is possible the theories to apply in all ages, or whether people get influenced in different ways, and change their behaviours accordingly as they grow older. Based on that knowledge, educators' work might be more effective by using different strategies to influence behavioural changes of different age audiences. It should be also pointed out that Heimlich & Ardoin's (2008) review concerns mainly approaches in environmental/conservation education whose main purpose is to affect individuals' behaviours. As far as it concerns my research and the focus on education in botanic gardens, I do not assume that the main purpose of this education is to change individuals' environmental behaviours. I intend to explore with an open mind the participants' views on what education is for in practice. However, the theories and concepts on behaviour change will be useful when looking at possible behavioural changes influenced by the activities that are developed through the botanic garden – school collaboration. In addition, taking into consideration the behavioural theories and how complex behaviour and behavioural change can be, it becomes evident that informal education has limited powers in terms of bringing behavioural change. Ardoin (2009) makes the same point when examining free-choice learning in relation to behavioural change. People's experiences in informal education settings are usually one-off, apart from cases where longer term projects are developed. For that reason, establishing collaboration between outdoor/environmental centres and schools may increase the opportunities that the students will learn new skills, new knowledge and will consider

changing their pro-environmental behaviours. The potentials of collaboration should be also considered as a way to tackle the issue highlighted by Heimlich & Ardoin (2008, p. 230) that 'enthusiasm for a new behavior or action tends to wane and participation decays in the absence of continual reinforcement'.

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Chapter 3 began by exploring different definitions of interorganisational collaboration and highlighting that the organisations come together to achieve what they could not achieve on their own. Various models attempt to depict different modes of collaboration on a continuum where the level of involvement and the quality of interaction rises from one end to the other. Success of an interorganisational collaboration can be assessed in terms of achieving the objectives of the collaboration but also the levels of the participants' satisfaction from the overall interaction. The factors that have been identified in the literature as contributing to the collaboration success can be categorised in six main themes i.e. environment, membership, process/structure, communication, purpose and resources. Further research is needed in relation to the factors influencing collaborations which clarify what success entails. Areas that need further research in the field of outdoor and environmental/sustainability education have been also identified including investigation of the process and nature of learning and the integration of indoor and outdoor learning. The concept of experience has been problematised using recent theoretical understandings which challenge the 'common sense' notion of experience as homogenous and simple construction. Learning theories such as theory of experiential learning, constructivism, sociocultural theory, and situated learning theory may be applied to explain learning in informal education settings. However, caution should be exercised when applying theories and frameworks; for example, from the free-choice learning field or from environmental education in formal settings, as my research concerns experiences that are highly structured in an outdoor education setting. Limitations in terms of achieving behavioural change through environmental education in botanic gardens have already been pointed out by looking at behaviour change theories. My research on botanic garden collaborations with local schools, aims to be informed by the above literature and fulfil the identified research gaps. The next chapter will focus on methodological issues, and will clarify the process of the research according to quality criteria. Starting by presenting my epistemological standpoints, I will continue by describing the fieldwork and the data analysis methods, justifying the reasons for my methodological choices.

Chapter 4. The story of my methodology

Having presented my research focus and my research questions, and also having placed my research within the wider policy, practice and research contexts from the fields of outdoor, environmental and botanic gardens education, I will now precede with presenting my ontological, epistemological and methodological choices. First of all, I will clarify the underlying theoretical assumptions in relation to the nature of reality (ontology), and in relation to how the knowledge can be acquired (epistemology). Next, I will explain the process of my research (methodology) and why I chose a qualitative approach, specifically an ethnographic case study, as the appropriate methodology to address my research questions. I will continue with describing my fieldwork, and issues such as access and building relationships with the research participants will be addressed. I will also explain the research methods, i.e. the tools I used to collect the data, I will refer to ethics and criteria for assessing/establishing the quality of my research, and finish with the data analysis methods i.e. the tools I used to analyse the data and an illustration of how I applied thematic analysis.

4.1. Paradigmatic, epistemological, ontological considerations

After deciding the area of my interest in order to investigate and defining my research questions, the next step was to think about how practically I was going to conduct the research, especially, collecting the data. However, I had first to clarify the lenses or the perspectives I was going to use to look through my topic which would also later determine the way I was going to analyse the data. Social theories provide particular lenses to view the social world, according to which we make certain assumptions and predictions. These kinds of lenses are often called paradigms, and within a paradigm 'there are shared views about the social world, often a distinct vocabulary, preferred research methods, and shared explanations and conclusions' (Walker & Loughland, 1998, p.5). The paradigm choice will open up possibilities to observe a wide range of phenomena, but also will close other opportunities that different paradigms may provide. Guba (1990, p.17) defined paradigm as a 'basic set of beliefs that guides action' or as a net that contains the researcher's epistemological, ontological and methodological issues'. Those issues can be explained through raising specific questions:

1. 'What is the nature of reality? (ontological)' (Guba & Lincoln, 1994, p.108). Is reality external to individuals of an objective nature or the product of individual

consciousness? Or is reality constructed but regulated by underlying structures and powers which influence individuals' constructions and actions? (Bryman, 2005)

2. 'What is the nature of the relationship between the knower and what can be known? (epistemological)' (Guba & Lincoln, 1994, p.108). Is knowledge something that can be acquired or has to be personally experienced (Burrell & Morgan, 1979)?

3. 'How can the researcher find out what she/he believes can be known? (methodological)' (Guba & Lincoln, 1994, p.108). If knowledge is regarded as objective and tangible, then the researcher can adopt an observer's role and methods of natural science. If knowledge is considered as personal, subjective then the researcher should get involved with their subjects and reject natural science methods (Burrell & Morgan, 1979).

My research is seeking to explore and understand the collaboration process between botanic gardens and local schools, and the learning accruing from the collaboration. I am particularly interested in individuals' perspectives and their interpretation of the interorganisational and individual interactions, and of the learning experiences with a botanical focus. For that reason, a constructivist (interpretive) paradigm seems the pertinent choice of lens to look at my topic. Constructivism claims a relativist ontology, according to which realities are apprehendable in the form of multiple constructions, dependent on the individuals or groups holding the constructions. There is no absolute reality (Burrel & Morgan, 1979).

> The principal concern is understanding the way the individual creates, modifies and interprets the world in which he or she finds himself or herself; the emphasis is placed on the explanation and understanding of what is unique and particular to the individual rather than of what is general and universal (ibid, p.3).

Regarding the nature of the relationship between the researcher and the object of the investigation (epistemology), they are interactively linked. Knowledge is based on subjectivist epistemology; it is the result of a dialogical process between the researcher and what is encountered (environment) (Robbotom & Hart, 1993). The methodology is hermeneutical and dialectical, implying that individual constructions can be elicited and refined only through interaction between and among investigator and the respondents. The constructions are interpreted, compared and contrasted aiming to establish a more informed and sophisticated construction including the etic construction of the investigator (Guba & Lincoln, 1994; Schwandt, 2000).

Reality exists within the context of a mental framework or a construct, and social reality is not independent but socially constructed and can have multiple meanings. The reality of meanings intents and purposes is found in the interpretation which is influenced subjectively by the values and purposes of the interpreter. Individual constructions are elicited and refined through interpretation then compared and contrasted dialectically to generate new constructions. No transformation of the real world is intended, only reconstruction. The aim of the researcher is not the reduction, or the approximation of a single observable reality but the presentation of value-based, multiple, holistic competing and often conflicting realities of multiple stake holders (Robbotom & Hart, 1993). In my research I am aiming to investigate how different participants of the same event interpret their experience which means that the research participants may hold different understandings. In addition through the process of reconstructing social reality, I will illustrate later in my methodology how my research provided the opportunity, and encouraged the research participants to reflect and improve their practices.

4.2. Methodological choices

Here, I shall explain the choices I had to make as part of conducting my research, such as how to conceptualise the research, how to identify appropriate forms of data, which cases to study, methods of data gathering, forms of data analysis etc., all of which comprise my methodology (Silverman, 2006). The critical question I will try to answer is why I used the specific strategies and methods in order to construct, collect and develop particular kinds of knowledge about the phenomena I investigated, i.e. the collaboration of Wakehurst with the three local schools (Scott & Morrison, 2007). I will begin the explication of my methodology by referring to the general logic and theoretical perspective for the research project, and then explain my methods, the specific tools or techniques I used to collect, analyse and interpret the data (Bogdan & Biklen, 2003).

My research questions expressed my research interest, that is, what I am looking for, but also guided my methodological approach. And it is research questions or in other words, research interests that should guide the methodological approach and not the other way around (Van Maanen, 1997).

My research questions are characterised by two main focuses, one on the collaboration process between gardens and schools and the other on the learning process accruing from

the collaboration. From the start I though that the best way to investigate a process was by observing a real life situation, a botanic garden collaborating with schools, and then develop a detailed understanding of how the organisations, and members of the organisations, interact, and also how pupils learn within that framework. I was aiming to investigate the phenomena as they happen and not in controlled conditions created by the researcher. In addition, I was interested in both observing the phenomena but also eliciting the participants' views and interpretations of their own actions and relationships.

Based on those ideas about how better to pursue my research interest, a case study methodology seemed to be a prudent choice. Yin (2009, p.18) explains that

> a case study is an empirical inquiry that investigates a contemporary phenomenon in- depth and within its real life context, especially when the boundaries between phenomenon and context are not clearly evident. In other words, you would use case study because you wanted to understand a real life phenomenon in-depth, but such understanding encompassed important contextual conditions because they were highly pertinent to your phenomenon of study.

Furthermore, Yin (2009) suggests that in terms of the technical characteristics of case study, it involves 'multiple sources of evidence' which need to 'converge in a triangulating fashion', and also 'prior development of theoretical propositions to guide data collection and analysis.'

Similarly, Stake (1995, p.xi) emphasises that 'case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances'.

Both definitions capture the qualities of a methodology that can bring about in-depth knowledge about the complexity found in particular cases, characteristics that fit with my research interests (see also Simons, 1996). The appropriateness of my methodological choice was further reaffirmed by Gray & Wood (1991) who pointed out the wide use of case study in interorganisational collaborations and the usefulness of the methodology in understanding the complexities involved in developing and sustaining collaborations.

However, it should be noted that case study as a methodology has received a variety of criticisms, for example about definitional issues i.e. what a case study is (Lincoln & Guba, 1985) which is reflected in the variety of categorisations that exist. Bassey (1999) distinguish between theory seeking, story telling and evaluative case studies, Stake (2000) speaks of intrinsic, instrumental, collective case study, and Yin (2009) speak of

exploratory, explanatory, and descriptive case study, just to name a few of the authors that suggested categorisations in order to resolve definitional problems and provide a clearer picture of what case study might include. Amongst the array of available types of case studies developed using different criteria (for example according to the purpose of case study, or the number of cases, or the style of reporting), instrumental case studies seem best to capture the aims of my research. Stake (1995) explains that instrumental case studies investigate a particular case in order to provide insight into an issue and refinement of theory, as opposed to intrinsic case studies whose main and enduring interest is in the case itself. My research is an instrumental case study in the sense that it aims to develop an understanding of collaboration and learning processes with an ambition of extending existing theories/theoretical frameworks.

In addition, for reasons of diversity, obtaining rich data and investigating the phenomena of my interest in different situations, I decided to adopt a multicase study design. Stake (2006, p.24) suggests that by drawing data from a purposive sample of cases, a sample tailored to a study, 'we build in variety and create opportunities for intensive study' and can examine how the phenomenon performs in different environments. The purpose of the multicase study should not be confused with comparative methodology which focuses on comparing cases. In a multicase study, the cases are a selected group of instances chosen for better understanding of a phenomenon, condition, or process, which Stake (2006) refers to as the 'quintain'. More importantly, a multicase design as Yin (2009) argues is appropriate for purposes of generalisation. Generalisation in case studies applies to theoretical propositions and not to population or universes. Cases are not sampling units chosen so that an inference can be made for a population or universe (statistical generalization). The goal in a case study is to lead us to understandings, assertions which may expand or develop theories (analytic generalization) (Yin, 2009). 'If two or more cases support the same theory, replications may be claimed' (ibid, p.38).

As far as locating the cases is concerned, first of all having worked as an educator in a Greek botanic garden, I was interested to learn more from investigating how a botanic garden learning programme 'works' and develops in a different cultural context. A British botanic garden was the right choice not only because my studies were based in a British university but also because as Oikawa (2000) notes the international field in botanic gardens' education is significantly dominated by UK botanic gardens and the leading country of botanic gardens education in Europe is the UK. In the introduction to my thesis (see 1.3) I explained that I chose to locate my research at the Royal Botanic Gardens, Kew because it has a well developed educational programme that fosters

collaboration with schools in a variety of projects. Also the fact that it is a world famous botanic garden, whose activities and context may be easily related to and understood by other botanic gardens, means that my research results may be easier disseminated and be of use for other educators. However, as Kew Gardens has two settings, one in London and one in West Sussex (i.e. Wakehurst Place, Kew's country garden) I had to face another choice. After visiting each site, and also interviewing separately the heads of the education departments at Kew and Wakehurst, I found that Wakehurst has developed its education work in a particular way which included offering a whole day activities programme led by a gardens educator which allowed more quality experience for young people. The numbers of visitors and school visits respectively were much greater at Kew in London, as opposed to Wakehurst which is based in the countryside, and access for many schools is not as easy as in the capital. The numbers seem to have an impact on organizing and managing the education work which seemed more developed at Wakehurst. Characteristically Kate A., responsible for the Kew Gardens education work, explained:

> **Kate A.:** The learning programme at Wakehurst Place is very different from Kew, London… and in a way, much better, I think. And one factor is, they don't have the volume of children we have at Kew, and every child that goes to Wakehurst place has an individual experience and a teacher-led or a teacher-facilitated experience, where at Kew we facilitate 50% of the schools that come in. So between the 80,000 school children, we do actually have professional contact with about 50,000. But that doesn't make it easy (Meeting with Kate A., 13/4/2006).

Kate's comment also brought forward an issue that outdoor education settings face in relation to whether they pursue a strategy that simply raises the number of visitors or whether they put more emphasis on providing good quality specialist experiences for every body which will not necessarily mean achieving big visitor numbers. Those responsible for educational programmes may value the second approach; however, in practice they may not be able to act according to their values as they also have to satisfy the managers of the settings who may often support a 'counting heads' (i.e. counting the number of the visitors rather than the quality of their experiences) approach when it comes to evaluating the outcomes of an education programme.

Furthermore, another factor that influenced my decision was the fact that I could have accommodation in the gardens for the whole period of my fieldwork which is an important factor for conducting my research. After all, Stake (1995, p.4) suggested that 'if

we can, we need to pick cases which are easy to get to and hospitable to our inquiry' perhaps for which a prospective informant can be identified, and with actors (the people studied) willing to comment on certain draft materials'. I expected that by living in the gardens I would be able to gain access and more easily identify the right people to observe, interact with and interview, who would provide me with data to answer my research questions.

Having decided my research setting as Wakehurst, I had now to determine my cases on the basis that when selecting a case, the first criterion should be 'to maximize what we can learn' (Stake, 1995, p.4). I applied a purposeful sampling strategy, which, according to Patton (1990) involves studying information-rich cases in-depth and detail where the focus is on understanding and illuminating important points rather than on generalising from a sample to a population. Patton also identified a variety of purposeful sampling approaches each with different implications for the kinds of findings that will be generated. It is an intensity sampling approach that represents best my sampling approach.

> Using the logic of intensity sampling, one seeks excellent or rich examples of the phenomenon of interest, but not unusual cases…the researcher seeks a sample of sufficient intensity to elucidate the phenomenon of interest….Intensity sampling involves some prior information and considerable judgement. The researcher must do some exploratory work to determine the nature of the variation in the situation under study (Patton, pp. 171-172).

With the help of the head of Wakehurst learning programme, Jean T., I identified three local schools which have developed a long term educational relationship with Wakehurst. Also the three schools, according to their own characteristics and conditions, have developed a different level of collaboration with Wakehurst giving me the opportunity to investigate collaboration expressed in diverse ways. The head of the learning programme was the appropriate person to assist me with the selection of the cases as she developed the learning programme from scratch with the help of local schools and she had an understanding of the overall breadth and depth of the various relationships that Wakehurst had with schools, and was able to identify those collaborations that would likely maximise the phenomenon of interest. Other staff at Wakehurst would have been able to give me information on which collaborations to examine. However, as the staff may get involved in some collaborations but not be aware of others, they would not be able to give me as complete a picture of the potential collaborations as the head of the learning programme. I did some more exploratory work in order to finalise the selected

case studies, as Patton suggests, which included contacting the head teachers of the schools and also visiting the schools (July 2006). My conversation with the staff and my observations at the schools confirmed the variety of links that the schools had with Wakehurst and thus the appropriateness of the selection of the cases. It should be also mentioned that the fieldwork entailed a further examination of all the participants' views on the collaborations.

Moreover, I would use the three case studies to investigate not only the collaboration process but the pupils' environmental learning during a variety of experiences co-created through the school – garden interactions. I must stress that based on my research questions, the cases are not the settings, i.e. the gardens and the three schools. Rather, the three collaborations between the gardens and each school are the cases (see figure 4-1). The case studies will be described in detail in Chapter 5, where figures 5-1 to 5-3 and tables 5-1 to 5-3 will provide overviews of what the collaborations entailed. In the introduction to Chapter 5 I shall also explain that, although the units of analysis are the organisational collaborations, in order to study the cases in-depth, a focus on individual interactions is essential. Figure 4-2 presents the individuals that were part of the case studies. Pupils' names and Wakehurst volunteers are not included here; however, in the data analysis chapters data from pupils and volunteers will be examined.

An important characteristic of case study is the contextual character of the knowledge we can derive from the cases. In my research, the contexts such as geographical, socioeconomic environment of the participants' lives, but also the more close environment of the settings, play an important role on the school-garden collaborations and the learning. Stake (2006) suggests that each case to be studied is a complex entity located in its own situation. It has its special contexts or backgrounds. Historical context is almost always of interest, but so are cultural and physical contexts. Others that are often of interest are the social, economic, political, ethical and aesthetic contexts. The phenomenon operates in many different situations. For that reason in the Appendix 3., the reader will find information about the schools, and the areas they are located and I will also present the gardens so that the reader can gain an impression of the area and what it looks like.

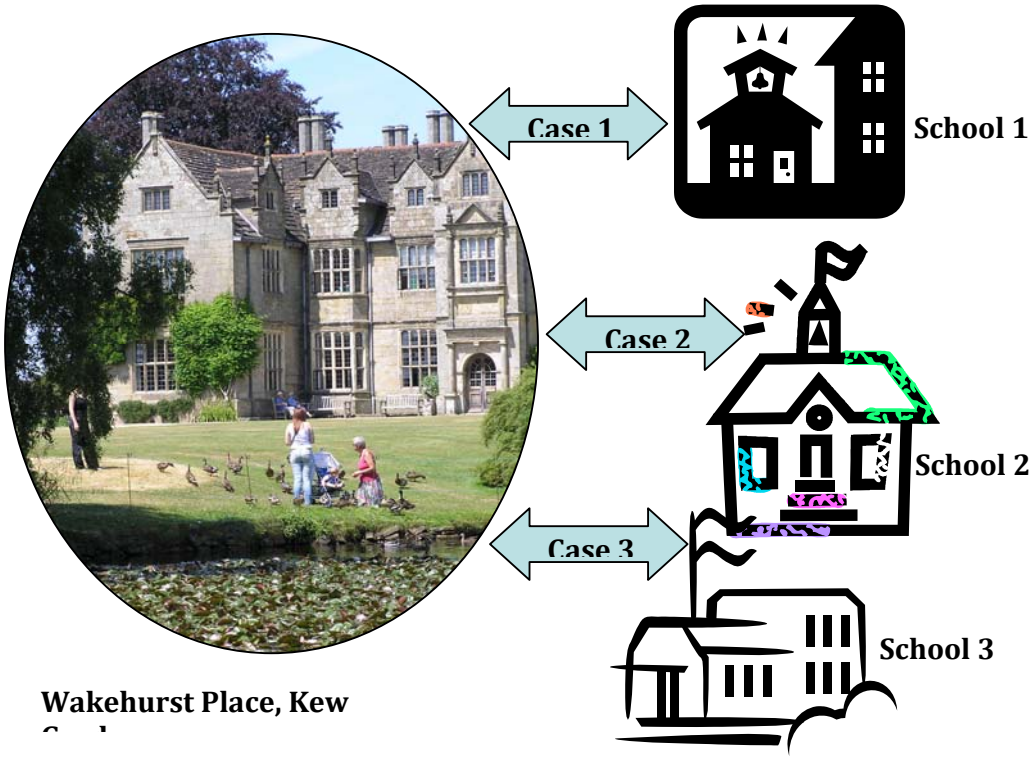

Figure 4-1 The cases of my research

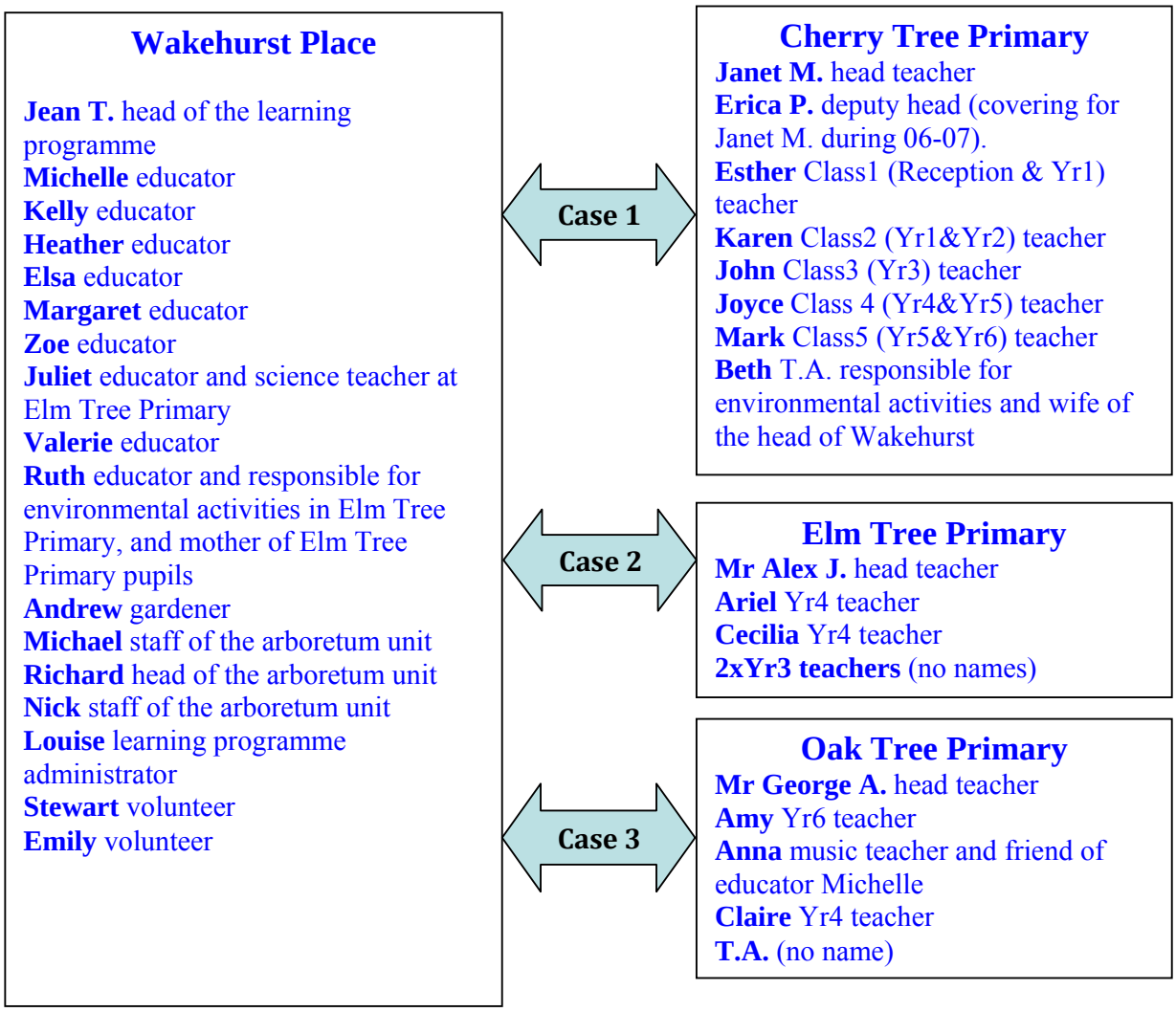

Figure 4-2 The research participants within the cases

In the beginning of my fieldwork, as I was living in the gardens and participating in the educational daily activities of the learning programme as a way to acclimatize myself to my research context, I realised that this informal participation could benefit further the data collection, and that way the ethnographic character of my methodology emerged. As a result, my methodology developed into an ethnographic multiple case study. The 'marriage' of the case study with the ethnography is not an unusual one. As Hammersley & Atkinson (2007, p.1) comment, there is a considerable overlap with labels such as 'ethnography', 'qualitative enquiry', 'fieldwork' and 'case study' which in many cases can have 'fuzzy semantic boundaries'. Not to mention that ethnographic case study is identified as a distinct type of case study. Stenhouse (1988, p.49) explained that an ethnographic case study involves

> a single case studied in-depth by participant observation, supported by interview, after the manner of cultural or social anthropology…Of ethnographic case study it may be said, that it calls into question the apparent understandings of the actors in the case, and offers from the outsider's standpoint explanations that emphasise causal or structural patterns of which participants in the case are unaware. It does not generally relate directly to the practical needs of the actors in the case, though it may affect their perceptions and hence the tacit grounding of their actions.

I must clarify that I cannot label my study as a pure ethnography. Hammersley & Atkinson (2007, p.3) explain that:

> Ethnography usually involves the researcher participating, overtly or covertly in people's daily lives for an extended period of time, watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting documents and artifacts – in fact, gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry.

From the above definition it is clear that an ethnographer, enters the field of their study with some idea and research interest. However, the focus of the study develops and changes while in the field. In this research, I started my fieldwork by having predetermined ideas about the main focus, and how and when I was going to collect the data, but it was during the fieldwork that I developed a more flexible methodology in order to capture better the phenomena I was interested in, which entailed processes, and individuals' interactions that I had not anticipated before I entered the field. Spending time in the field and close, involved contact with the group studied, provided more opportunities for useful data to emerge during my fieldwork, as Van Maanen (1988) has suggested.

The ethnographic characteristics of my study entail collecting naturally occurring data that derive from situations which exist independently from the researcher's intervention (see also Silverman, 2006) – that does not guarantee absence of the researcher's influence, despite best efforts to minimize that impact as Hammersley (1992) has noted –, developing a close involvement with the research participants including building trust and even developing friendships (see LeCompte & Schensul, 1999a) and gathering information from a variety of sources and with a variety of tools i.e. interviews, informal observations and participant observations (see Hammersley & Atkinson, 2007). Finally, in my research I tried to frame the interactions I observed and the learning process in a sociopolitical context (LeCompte & Schensul, 1999a), in particular the influence or lack

of influence on participants' actions from the institutions they belonged to, but also from the botanic gardens' and government's education policies. The ethnographic elements of my methodology contributed immensely to a more holistic, in-depth understanding of the cases I was studying, which is one of the main aims of case study.

In summary, my selected methodology, an ethnographic case study, enabled me to answer the research questions, as it provided a flexible and open methodology to investigate in-depth the collaborative phenomena as they occurred. I did not assume that collaboration is a predetermined activity but rather that it may encompass a variety of arrangement and interaction according to the botanic garden's and schools' emerging needs. In addition, during the fieldwork, using a variety of methods I was able to gather information on the environmental education activities offered when botanic gardens and schools collaborate, to participate in the activities, and to interrogate afterwards all the participants on how they perceived their environmental learning experiences. In such an approach, it is essential to observe the environmental education activities, inquire whether and how the educators and teachers encourage environmental learning, and find out students' views on how they make meaning of their experiences in relation to environmental issues. Within this collaboration framework, I aim to investigate whether and how students may be able to link their environmental learning experiences in school and in the gardens. By looking closely across the settings, I am more likely to be able to identify continuities and then inquire of the students whether and how they identify the continuities of their experiences across the settings. Participating in, and observing, the activities during which students learn is essential to understand their experiences, but also to be able to ask them to reflect on their experiences with the appropriate questions. The ethnographic case study design allowed a holistic understanding of the phenomena under investigation, during which I got first hand experience of the phenomena through the participant observation, and then I obtained information from all the participants involved.

Based on the overall description and justification of my methodological choices, it is evident that I have adopted a qualitative research approach. Miles & Huberman (1994, p.6) comment:

> Qualitative research is conducted through an intense and/or prolonged contact with a 'field' or life situation. These situations are typically reflective of the everyday life of individuals, groups, societies, and organizations. The researcher's role is to gain a 'holistic' (systemic, encompassing, integrated) overview of the context under study: its logic, its arrangements, its explicit and implicit rules. The researcher attempts to capture data on the perceptions of local

> actors 'from the inside', through a process of deep attentiveness, of empathetic understanding (Verstehen) and of suspending or 'bracketing' preconceptions about the topic under discussion.

My qualitative research emphasises words rather than quantification in the collection and analysis of data (Bryman, 2004) and respectively the empirical data I gathered are mainly in the form of written text and oral information or visual material such as photos and videos.

> By focusing on the collection of qualitative data the researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied and the situational constrains that shape the inquiry (Denzin & Lincoln, 2000, p.8).

4.3. Fieldwork

I will now continue with describing my fieldwork, the process of collection of the qualitative data that would provide me with an understanding of the cases and I will give more details on how the ethnographic character of my research emerged in the field. Fieldwork should be regarded more as an interpretive process rather than a simple visual or auditory one (Van Maanen, 1988) during which the field is constructed rather than discovered (Atkinson, 1992). The narration will begin with how I gained access to my research settings, and also how I built relationships with my research participants, two factors decisive for my fieldwork.

4.3.1. Gaining access, building relationships

> I went at 8.25 to the school to do an interview with Mark. When I entered the school I signed in and met the head teacher, Mrs Erica P., she mentioned to me about my help at the Gardening club and the Eco-school committee, and I said that I didn't do anything special. Mark said that I should be given an office there…and I noticed that I was the last person to sign out yesterday and the first person to sign in the next day. I remember that during the gardening club one girl asked me to tie her laces and I felt that the children are becoming more familiar with me. I also met Karen (another teacher) so I asked her some questions about the activities they did after the visit. I am anxious that I will put pressure on

> the teachers so I didn't ask her to take pictures of the children's drawings (Research diary, 12/10/2006).

Writing about my fieldwork meant giving an account of my life during the period of the data collection including the specific methods I adopted and developed before entering the field and how they expanded and evolved during that period.

> We need to pay attention to the actual process whereby research is carried out…If the researcher is living for an extended period in the community he is studying, his personal life is inextricably mixed with his research. A real explanation then of how the research was done necessarily involves a rather personal account of how the researcher lived during the period of study (Whyte, 1993, p.279).

My fieldwork took place during the school year 2006-2007 (September to July) when, in total, I spent 6 months at Wakehurst collecting my research data (see table 4-1 as an overview of the fieldwork, and tables 4-2, 4-3 and 4-4 for more detailed information). Hammersley (2006, p.5) critiques the shortness of much contemporary fieldwork as this can encourage an ahistorical perspective, and he also critiques ethnographers' tendency to treat their observations in the situations they study as typical of what always happens there. He suggests that 'what goes on in any situation changes over time. Some of these changes are cyclical, in shorter-and/or longer-term patterns'. I chose to decide the periods I would spend at the research settings according to what collaborative activities the schools and Wakehurst would plan and implement during a whole school year based on the fact that schools and Wakehurst learning programme were planning their activities on an annual basis. I argued that if I could observe the annual activities it would be more likely that I could obtain sufficient data on patterns of what normally happens in the settings. Moreover, during my interviews I intended to ask questions about the history of the collaboration which would help reveal whether my observation data revealed patterns or not.

By living in the gardens I had the opportunity not only to observe but also to participate and get the feel of my research settings' everyday life. Fieldwork from the beginning was exciting but also stressful. I worried about teachers' and educators' attitudes to my research, and myself as an outsider; I was hoping to be accepted and welcomed. As Whyte (1993, p.297) commented when he did his research in the slums of Boston in 1930s

> there is a strain to doing such fieldwork. The strain is greatest when you are a stranger and are constantly wondering whether people are going to accept you. But much as you enjoy your work, a long as you are observing and interviewing, you have a role to play and you are not completely relaxed.

The attitudes and perceptions of my research participants towards my presence in their everyday activities is a very important issue that concerned me throughout my fieldwork. For that reason I will explain how I gained the access to my settings and developed relationships with some key people there. Wakehurst and the three local schools can be characterised according to Silverman's (2006) categorisation of the research settings as 'closed or private settings' where the access is controlled by gatekeepers. Depending on my research aim, and also on ethical considerations, the access I pursued and gained into my settings can be named as 'overt access' based on informing my research participants about the purposes of my study and getting their agreement often through the gatekeepers (Silverman, 2006).

Table 4-1 Overview of the fieldwork

Dates/Period of time		**Purpose of fieldwork/main activity – Settings**
1st stage	13 April 2006	Interview with Kate A., Kew Gardens' education responsible – Kew Gardens.
	31 April 2006	Interview with Jean T., head of the Wakehurst learning programme – Wakehurst.
	May 2006	Decision to conduct the research at Wakehurst Place, identification of the schools to participate in my research with the help of Jean T., phone and e-mail communication with the schools to present my research interest and invite them to get involved in the research.
	21 May 2006	Meeting with the head teachers of the schools of my research and Jean T. at Wakehurst Place to discuss the roles and responsibilities of all the research participants which led to the Memorandum of Understanding (MoU see Appendix 5.)
2nd stage	10-14 July 2006	Getting the feel of the field, finding out the school's intensions regarding their collaboration with Wakehurst for the next school year – Wakehurst, Cherry Tree Primary, Elm Tree Primary, Oak Tree Primary

Dates/Period of time		Purpose of fieldwork/main activity – Settings
3rd stage	17 September 2006 – 3 November 2006	Autumn term fieldwork – Wakehurst Place, Cherry Tree Primary, Elm Tree Primary, Oak Tree Primary.
	6, 26 February – 30 March 2007	Spring term fieldwork – Wakehurst Place, Cherry Tree Primary, Elm Tree Primary, Oak Tree Primary.
	30 April 2006 – 29 June 2007	Summer term fieldwork – Wakehurst Place, Cherry Tree Primary, Elm Tree Primary, Oak Tree Primary.
4th stage	24-28 September 2007	Feedback week, presentations to research participants – Wakehurst Place, Cherry Tree Primary.

Entering and integrating into Wakehurst life

My main gatekeeper was the head of the Wakehurst learning programme, Jean T., who welcomed my research and supported me throughout the period I lived at Wakehurst, indicating the open character of the learning programme and its willingness to improve its practices. That willingness was also related to the pressure that botanic garden education has in meeting specific organisation targets, especially high numbers of school and general public visits, and not really having time for evaluation. My research was perceived as a way to gain evidence of the value of the learning programme but also to identify areas for improvement. The head of the learning programme during my fieldwork asked me for feedback on the learning programme, and the educators in a variety of occasions highlighted how valuable they found my interviews in encouraging them to reflect on their practices (for more details look at the 4.5.2. Influencing the participants' life and practices).

Also contributing to gaining access to my research settings was the development of relationships with people working for the learning programme at Wakehurst. Furthermore, the intimacy I developed with the people was also related to the ethnographic character of my research. There are two events I regard as important for enabling me to enter Wakehurst community. The first was the attendance of the Congress on Education in Botanic Gardens, 6-10 September 2006, where I met some of the key people of the Wakehurst learning programme. The time I spent with them during the

formal sessions of the congress and the social events gave me some confidence and more relaxed feeling about my fieldwork which started immediately after the end of the Congress. The second, initially unfortunate, event was the lack of vacancies in the gardens' accommodation for two weeks in September 2006 when I arrived for my fieldwork. I was offered accommodation from two important (as I came to realise later) people from the learning programme. One of the people, Louise, was part of the administration of the learning programme, responsible for communication with the schools and organising the logistics and practicalities of the school visits. The second person, Michelle, turned out to be the most creative educator in the gardens like a mother figure, not only for developing the educational activities but also for keeping balances in the interpersonal relationships whenever it was needed. By having the opportunity to live with their families for those two weeks, I was able to have an informal talk every night, share my anxieties, my aspirations from my research and gain some information behind the scenes by 'chatting on the sofa with a glass of wine'. I still keep in my memory the moments I spent with both English families, and I feel grateful for the great hospitality they offered me.

Highlighting further the relationship with Michelle, and in relation to the validity of my research throughout the fieldwork, some of the most valuable moments were early mornings when I went into the Mansion – the headquarters of the learning programme – to meet Michelle and have a short talk regarding my observations and experience of the previous day, and to ask for feedback from her when she was part of the activities I had observed, or her opinion on the interpretation of the events I observed. Furthermore, Michelle also found our morning talks useful as they not only provided her a way to reflect on her own practice, but also enabled her to gain an outsider's view on the learning programme, identify its strengths and the weaknesses and decide where more effort should be made. On the whole, these morning talks did not only give me strength in cases of nervous stress during my fieldwork, they also added validity to the data as Michelle was actually checking on my interpretations of the field. Near the end of my fieldwork Michelle asked me to comment on her way of teaching and also to make recommendations for the improvement of the learning programme.

However, Lefstein (2010) challenges the extent to which researchers share their views with research participants during ethnographic fieldwork. When an ethnographer is collecting data, different communication ways and levels may be adopted which vary from the non-reciprocal communicative stance, in which the researcher 'attempts to minimise disclosure of his or her own opinions and perspective, at least with regard to the

topic of research', to the reciprocal communicative stance, which 'involves engaging in a more open exchange of ideas with the research participants, voicing one's perspective in the reciprocal to and fro of conversation' (ibid,p. 82). The communicative stance that the researcher may choose can also vary depending on the situation and the people the researcher is interacting with while collecting data.

Lefstein (2010) explained that during his ethnographic research in an English primary school on the implementation of the English National Literacy Strategy one of his research participants with whom he had established a good relationship has been asking for feedback on her practices. As the fieldwork progressed, the researcher felt more confident and certain that opening up to the participant and providing her with a more candid, constructive criticism would be appropriate. However, the participant, after the shift of the researcher giving a more open and sincere feedback, requested to withdraw from the research which was a significant loss for the project because the specific participant was the closest to the researcher, her teaching added an important dimension to the research, and because that ending showed that the researcher's openness to the participant resulted in aggravating 'an already precariously pressured situation' (ibid, p.88). Lefstein's example illustrates the fine balance that the researcher has to maintain during the fieldwork in relation to what communicative stance she chooses to adopt with the research participants. During my informal discussions with Michelle, she asked me for feedback in a variety of occasions and also my presentation to my research participants in the end of the fieldwork aimed partly at giving them some sort of feedback on their practices. However, I was always concerned about the ways I would provide my participants with feedback, and cautious not to cause them any discomfort. Having finished my fieldwork though, I did wonder whether in some cases I could have been more openly 'critical' with my participants, and whether that would have made any difference to their practices, but also to my relationship with them.

Access was an important and quite stressful issue for me in many instances. I realised from the early stages of my fieldwork that simply by waiting for my contacts from my research settings to call me and inform me about collaboration activities between the gardens and the schools was not going to be a success; that plan simply did not work. The reasons were firstly, my contacts were too busy with their work schedule and even if they confirmed that they would call me, for example when planning meetings were scheduled, that often did not happen. Secondly, many collaboration activities were not prescheduled and expected such as the school visits. They were the result of organisational needs that were unexpected such as the Billionth Seed project, and only by 'hanging around' in the

gardens or in the schools I would be able to get any information about these events. The best option was to spend as much time as possible in my research settings and by being there I would obtain the information I needed. By being in the settings, and by an attitude of trying to participate in the activities of the research settings, I had the opportunity to find out incidental events related to the collaboration of the gardens with the school. In a way, my fieldwork is characterised by a continuum of experiences as a result of which my life integrated into the schools' and the gardens' life. The following excerpt from my diary describes an instance of how my attitude of 'hanging around' in the learning programme area I would obtain important information about collaborative activities between the garden and the school.

> I woke up early to prepare my conference presentation, and around 10.30 I just wanted to say hello to Louise (Wakehurst learning programme administration officer) and to the Brighton student who was doing her dissertation on the learning programme, so I went to the Mansion offices. Only the student and Louise were at the office and we had coffee there. I brought some nice biscuits from my flat and we had coffee, chatting about her family life and also my research. Near the end of me staying at the office, Louise told me that Richard the head of Wakehurst arboretum unit is organising to put some birds nests cameras in the gardens and in 6 local schools and the children will monitor the nesting process and she phoned him to speak to him about organising the project. As a result I found out that the project would involve two of my research schools and I arranged a meeting with Richard. Also, while I was there, Louise arranged a planning meeting with Michelle and a local primary school teacher for a visit on building shelters so I asked if I could step in and observe the planning meeting and she said yes. So from just being there, having coffee and chatting, I got some very good information related to my research.
>
> When I left the Mansion, I thought that so many things are happening related to my research directly or indirectly and it is really a matter of chance and choices how much I can 'catch' and collect information about (Research diary, 9/3/2007).

Walford (2009, p. 273) suggests that "ethnography sometimes is disparagingly characterised as 'hanging around' and writing about what is seen heard". But he continues to argue that an ethnographer carefully considers the settings in which to 'hang around'. In the above excerpt I exemplified how I gained important information about my case studies by 'hanging around' at the Mansion. The Mansion, and in particular the educators' and volunteers' meeting room which is next to the administration office and the head of the learning programme office as well, was not an incidentally chosen place to 'hang around'; it is the area where the activities that involve collaborations with

schools are planned and organised. In addition, the administration office is the place where most of the communication with the schools takes place, and also where communications between the learning programme and other departments of Wakehurst occur in order to organise educational events which usually involve schools.

Moreover, integrating myself into the life of the Wakehurst learning programme was smoother (in comparison to the schools) because by living there I was feeling that I had a specific role; for example, I could do some volunteering for the school visits on a daily basis or volunteer during the weekend for public educational events, and by doing this, I was also feeling part of the garden community. Owing to my background as an educator, it was easier for me to develop a feeling of collegiality with the garden staff, and understand more easily their activities. I could connect myself with them more easily. Whyte commented on the role he adopted by being in the field: 'While I sought to avoid influencing individuals or groups, I tried to be helpful in the way a friend is expected to help in Cornerville' – extract from the ethnographic work of Whyte (1993, p.305) in the slums of Boston, Cornerville, 1920.

Living in accommodation in the gardens was a privilege in many ways. I could start my day early by a run around the gardens whose landscape I came to appreciate the landscape in different seasons, and also develop an understanding of the garden's landscape and its use by the learning programme, for example, which areas were used by the learning programme and how. My way of life was tuned to the gardens' schedule. Even if I did not have a specific task for the day I would just go to the Mansion to have a coffee with the volunteers and the educators in the meeting area, and through this might be asked by an educator to help with a school visit, or just give assistance to any activity that was going on. Also, I developed a friendly relationship with other departments of the gardens, such as the arboretum unit and the gardeners, and came to know some of the politics of the gardens. I volunteered for other events for the wider public such as the Big Draw[10] and a Crest awards[11] event.

[10] A month-long season of drawing events for the wide public in 1000 venues such as museums, galleries, botanic gardens, funded by the Campaign for Drawing charity (www.campaignfordrawing.org).

[11] Britain's largest national award scheme organised by the British Science Association in collaboration with scientific institutions such as universities, botanic gardens, science museums, that gives young people aged 11-19 opportunities to explore real world projects related to the subjects of science, technology, engineering and maths (www.britishscienceassociation.org/web/ccaf/CREST).

Entering and integrating into my research schools' life

Accessing the schools of my research and integrating into their communities was harder than accessing and integrating into Wakehurst community. At first, I came in contact with the schools through the head of the learning programme. I explained through e-mail communication with the head teachers my research interests. They replied that they would like to participate in my research, and in May 2006 I held a meeting with the head of Wakehurst learning programme, the head teachers of the three schools and my supervisors to discuss the particularities of conducting the research. The outcomes of the meeting resulted in all the participants signing a Memorandum of Understanding (see Appendix 5) which set out the guidelines as to roles and responsibilities of all participants in my research. The head teachers were the initial gatekeepers and they introduced me to the teachers and gave me the permission to participate in the school's activities related to my study. As the collaboration of each school with Wakehurst varied in regularity and intensity, the integration and the level of relationships I developed with the schools during the fieldwork varied accordingly. For that reason I will continue with describing how the fieldwork went in each school separately.

- **Cherry Tree Primary**

Firstly, as part of my data collection in the schools I planned to attend preparation work related to the school visits to the gardens, and follow up work in the school class after the visit. Soon I realised that the teachers were very busy with their everyday work and that my research wasn't their priority, so, getting into the class to observe activities related to the school visits was very difficult. The hardest thing was finding out the information about when things that would interest me were taking place, and simply phoning the school everyday was not an option. I decided that in order to increase my observations in the school I could start by volunteering and participating in the environmental education activities in the school which would still be relevant to my research. At Cherry Tree Primary I participated in activities such as the gardening club once a week and the Eco school committee meetings once a term. Beth, the wife of the head of Wakehurst was responsible for the gardening club and the Eco school activity and I regarded her as another gatekeeper as she welcomed my presence in the school and valued my contribution giving me lots of encouragement for continuing my research. My volunteering experience at Cherry Tree Primary but also in the other schools of my

research as I will explain later, provided me data about the environmental policy of the schools and whether it was influenced by the collaboration with Wakehurst. Moreover, during the volunteering, I would become familiar with my research participants, both the pupils which would help for the interviews and with the teachers so that they would provide me with information more easily. Also importantly, I felt that I was contributing to the activities in the schools and in a way paying back the people who were participating in my research.

As time passed, and I was visiting the school more often, I noticed that the teachers' initial reluctance gradually started to soften, and it was easier for me to get access to class activities especially before and/or after the school visits. Some of the access difficulties were related to unpredictable factors, e.g. an Ofsted inspection which meant that I had no access to the school around those days. I could do nothing but accept that fact. I also visited Cherry Tree Primary whenever they participated in other activities such as the Wild View project. I helped Wakehurst staff to install the nest box with the camera in the school as part of the project and went back to the school to see how and when the pupils were observing and recording the nesting activity. Table 4-2 (p.113) presents the activities I collected data on, in relation to Cherry Tree Primary's collaboration with Wakehurst. Moreover, it should be mentioned that as time passed, I noticed a difference in the Cherry Tree Primary pupils as well as the teachers. Specifically, the pupils started to recognise me and talk to me whenever I went into the school and even greeted me when I met them in the village.

Table 4-2 Fieldwork related to Cherry Tree Primary collaboration with Wakehurst

Autumn Term	
School visits	Class 2, Class3, Class 4, Class 5
Gardening club once a week	Class 3 pupils
Eco School meeting once a term	Representatives from each class
Spring Term	
School visits	Class 2, Class3, Class4, Class 5
Gardening club once a week	Class 3 pupils
Eco School meeting once a term	Representatives from each class
The Billionth Seed project	The whole school
Summer Term	
School visits	Class 1&2, Class4, KS2 pupils combined visit
Wild View Project	The whole school involved
Gardening club every Tuesday	Class 3 pupils
Eco School meeting	Representatives from each class

The access problems I had with Cherry Tree Primary (but also with the other schools as I will discuss later) in the beginning of my fieldwork were acknowledged by the research participants afterwards, when I developed a closer relationship with them. Characteristically during a meeting I organised with representatives from the schools of my research and the Wakehurst learning programme to discuss the progress of my research, the head teacher of Cherry Tree Primary commented on my access and presence in their school:

> Cherry Tree Primary head teacher: I understand it was difficult for you to come in; it did take quite a long time and the teachers are under a great pressure of time; I don't know if you felt that, and there was at first a reluctance, but you have generally won everybody round haven't you? And I think hopefully you sort of feel part of the school now…we've got to know you very well and you have really become more part of the team I would say and actually you have been very helpful to us as well. With our gardening club and our Eco club so, if I am honest, it started off a quite a pressure for teachers and particularly the interviewing didn't it? It was just time. It was lunch time or after school, but you gradually built up a really nice relationship with everybody and you fit in very well with us don't you? (Meeting with representatives from the schools and Wakehurst, 14/5/2007).

The issues acknowledged by the head teacher in terms of accessing the schools to conduct my research resonates with Walford's (2001a) remark on a more general phenomenon of

English educational practitioners' hostility to being researched. Based on my experience during the fieldwork, the teachers' reluctance to participate in my research can be attributed in part at least, to the teachers' responsibilities and hectic working schedule which is devoted to meeting the Ofsted standards. However, it can also be attributed to teachers' unwillingness to be observed during their practice, as such classroom observation is an activity that usually takes place during the Ofsted inspections and aims at evaluating teachers' performance a point also made by Lefstein (2010).

I should also point out that as I chose to investigate three cases i.e. three collaborations of Wakehurst with local schools which would add variety and richness to the data, each case varied in terms of the quality and frequency of the collaborative activities. It became apparent that Cherry Tree Primary had the strongest and more frequent collaboration with Wakehurst in comparison to the other two schools. Therefore, I went into Cherry Tree Primary more often than the other two schools and I developed a closer relationship with the people from that particular school. The strong relationship of the whole school with Wakehurst is indicated also by the fact that all the teachers of the school and all the classes got involved in the collaboration through the visits and the other projects that the collaboration entailed. The following excerpt from my research diary illustrates the attachment I developed with Cherry Tree Primary which was manifested intensely during the last week of my fieldwork.

> During lunch time I went to Cherry Tree Primary to help out the gardening club for the last time as my fieldwork was reaching the end. Beth said that she thought I had forgotten them. The pupils emptied the compost bins from each class and then they went with Beth to take cutting from a plant in the front of the school which they would use for the parterre in front of the staff room. Then they had pots and Beth showed them how to plant the cuttings. We took pictures altogether, Beth said thank you for all the help and I went to the staff room to leave my cake there, and said goodbye to the teachers. When I went out I started crying, and Esther gave me a big hug. So emotional! I will never forget my ups and downs with this school and all the lovely time I had; especially with the gardening club. I took a picture of the garden I planted with Yr1 class. The parterre looks very healthy and the plants are doing well (Research Diary, 27/6/2007).

Because of the level of involvement and emotional attachment I developed with the research participants, issues of whether I retained a critical perspective on participants' practices should be raised. In section 4.5.2. I will discuss this danger of becoming native, and how I tackled that issue during the fieldwork.

- **Elm Tree Primary**

The Elm Tree Primary school visit to Wakehurst usually took place once a year during the summer term, but I wanted to develop a relationship with the school earlier in my fieldwork. For that reason, I participated initially in the nature club's activities during the Autumn term, and when the nature club stopped, I participated in the Eco school committee meetings once a week. These were organised during lunch time by Ariel, Yr4 teacher, with the support of Ruth, a Wakehurst educator, whose children were pupils at the school. I consider both Ariel and Ruth as my gatekeepers for Elm Tree Primary school. Ariel, as a teacher, organised environmental activities in the school and she was also the teacher whose class visited Wakehurst and she got involved with other projects related to Wakehurst collaboration e.g. the Wild View and the Billionth Seed. Although Ariel was the one who was supporting the collaboration of Wakehurst with the school, and often expressed her desire the collaboration to be more intense, in practice she was always busy with other responsibilities in the school, e.g. the sports club so her efforts were always limited. Towards the end of the fieldwork I started having doubts about her priorities in relation both to the collaboration and to wider environmental activities in the school. For example, although officially Ariel was responsible for Eco school meetings and activities, in the end it was Ruth who was developing most of the activities and implementing them, and I also became heavily involved. During the summer, I organised some environmental games for the Eco school committee meeting and I also helped Ruth with preparing and planting the school allotment. Another gatekeeper for Elm Tree Primary was Juliet who was both a Wakehurst educator and a science teacher at Elm Tree Primary. She provided me with lots of inside information about the school and she invited me into the school to observe one of her Yr2 lessons which was based on activities usually delivered at Wakehurst.

Another project which I examined as part of my research at Elm Tree Primary was Wild View, and I assisted Wakehurst staff with installing the bird box with the camera in the school. However, as no birds nested in the box, the project was not completed and I did not observe many activities related in the school. I should acknowledge that, because of Ariel and Juliet, I was able to observe class activities in the school related to the visit to Wakehurst, and also conduct interviews with all the participants in a rather straightforward way (see table 4-3 for an overview of the activities I examined during fieldwork in relation to the Elm Tree Primary – Wakehurst collaboration). However, I was not in the school as often as I was in Cherry Tree Primary, and, as Elm Tree Primary is a big school, I did not develop as intimate a relationship with staff as I developed at

Cherry Tree Primary which is much smaller and where it was easier to feel more familiar in its environment. It is indicative that in Cherry Tree Primary all of the school staff and the pupils knew me, while at Elm Tree Primary it was only a couple of classes and three or four teachers that were involved in my research and with whom I interacted. From the whole school, which numbers more than 400 pupils, it was only two classes that took part in the school visits to Wakehurst and the Billionth Seed project, and the two class teachers. Although two more classes and two teachers took part in the Wild View project, this failed and hence there was no point of investigating further their participation. It is evident that the fieldwork in Elm Tree Primary examined a rather small part of the school population due to the restricted nature of the collaboration, especially in comparison to the whole school involvement in Cherry Tree Primary.

Table 4-3 Fieldwork related to Elm Tree Primary collaboration with Wakehurst

Autumn Term	
Nature club once a week	Various Yr group children
Spring term	
Eco school club once a week	Representatives from each class
The Billionth Seed project	Yr4 pupils, 2 classes
Summer term	
Eco school meetings once a week	Representatives from each class
Wild View Project	Yr3 2 classes involved
School visit.	Yr4 2 classes

- **Oak Tree Primary**

Oak Tree Primary is the school I got most worried about during my fieldwork. I visited the school in September to find out their intentions regarding their collaboration with Wakehurst and the teacher, Amy, informed me that they were planning for a visit in summer term in relation to habitats but she could not tell me too many details. Furthermore, the school did not have a nature or gardening club and the Eco school committee meetings were only held once a term. I managed to observe one of the meetings but did not participate actively. I tried to communicate with the school many times to find out any plans in relation to the school visit but my efforts were fruitless until the beginning of the summer term. Later on I found out that the work of the head teacher, who was my initial access, was being covered for a long period by the deputy head. In

addition, the school was changing its curriculum that year and renovating the school grounds, all big responsibilities that meant that my research was not only not a priority for the school, but possibly was seen as a burden. An indication of the weak participation of the school in my research was the fact that when I organised a meeting with the head teachers of the three schools and the head of Wakehurst learning programme midway through my fieldwork to report progress of my research, Oak Tree Primary was the only school that was not at the meeting. The lack of communication with the school caused me stress during the fieldwork as I started doubting whether that case would provide me with any data. Michelle, a Wakehurst educator, who had been teaching in the school in the past and had personal relationship with Anna, one of the school teachers, communicated with her friend in relation to the visit and provided me with information about the changes in the school that made it easier for me to understand and accept the access problems. I should also acknowledge that Wakehurst staff were very helpful in overcoming the access problems with the schools, and with Oak Tree Primary in particular, and provided me with both psychological and practical support.

In the end, that case went unexpectedly well, as not only the visit happened, but also staff from the school participated in a professional development course that would help them with renovating their school grounds. I was able to observe and participate in activities in the school related to the school visit, and I also helped improve the school's environment during the school grounds week. Moreover, the teachers showed me how they were planning to use their knowledge from the professional development course in the school (see table 4-4, p.118) for an overview of the activities I examined during fieldwork in relation to Oak Tree Primary's collaboration with Wakehurst). I should also mention that during the fieldwork in the summer term, an Ofsted inspection at Oak Tree Primary resulted in my not having access to the school during that week, as it had also happened with Cherry Tree Primary. My experience in Oak Tree Primary provided me with data that I did not have from the other schools; hence, despite the stressful issues of access I encountered, in the end I felt rather content with the data I collected from the fieldwork related to Oak Tree Primary collaboration with Wakehurst. I feel that my main gatekeepers in the school had been Michelle, the Wakehurst educator, Anna, her friend who teaches music at Oak Tree Primary, and Amy, the Yr6 teacher who gave me access to her class. Again, I don't feel that I developed with Oak Tree Primary the same close relationship that I developed with Cherry Tree Primary and only a few of the school staff and the pupils got involved in my research (one Yr6 class and their two teachers who participated in the school visit to Wakehurst, and also another teacher and a T.A. who got involved in the professional development course).

Table 4-4 Fieldwork related to Oak Tree Primary collaboration with Wakehurst

Autumn term	
Visited the school to discuss with teacher about next year plans in relation to Wakehurst	-
Spring term	
Eco school committee meeting once a term	Representatives from each class
Summer term	
School visit to Wakehurst	Yr6 pupils
School grounds week	Yr6 pupils
Professional Development Course at Wakehurst	Yr4 teacher and T.A.

A more detailed description of what the collaborations of Wakehurst with the schools entailed will be given in Chapter 5 where I present the case studies. As I have discussed how fieldwork went in all the research settings, whether and how I integrated with the settings' activity, and addressed access issues, I will now continue with discussing the methods I used to collect data during the fieldwork.

4.3.2. Research methods – tools for gathering the data

Participant observation

Having the opportunity of living in the gardens allowed me to implement participant observation as one of my main research methods for collecting the data. Silverman (2006) suggests that in order to get an in-depth understanding of the social world and processes a researcher is investigating, he or she must participate in the everyday life activities and not just observe from a distance. Furthermore, participant observation entails adopting a role in the field, reflecting on the participation (Hammersley & Atkinson, 2007) and 'producing written accounts and descriptions that bring versions of these worlds to others' (Emerson *et al.*, 2001, p.352). My role in my research settings varied according to the situations I was engaged in. For example, I was usually a volunteer in the garden activities during school visits or educational events for the general public. In the schools I was usually an adult helper or sometimes just an observer especially during the teaching that was going on in the school classroom. Gradually, as I gained the trust of the teachers and a familiarity with the pupils, I was more involved and sometimes asked if I could participate in the classroom activities. As Spradley (1980, p.58) has pointed out, 'the role

of participant observer will vary from one social situation to another and each investigator has to allow the way he or she works to evolve'.

I would try to participate and observe myself and others at the same time. In addition, my attention was enhanced in the field and the range of activities, groups, individuals I observed became wider; for example even if I was participating in a group's activity during a school visit, I would also look at other groups or at the adults' behaviour as well.

Participating and also observing created a feeling of being an outsider and an insider of the group at the same time. Looking at the cases as an outsider was more distinct during the period I went away from the field for example during the school holidays, or when no collaboration activities were taking place – especially during winter time. These intervals away from the field, gave me time to start transcribing the voice-recorded data, look at the data, reconsider my methods (which will be explained in detail below), including my observation techniques. By reflecting from a distance on my research process, it was easier to identify important people and relationships to whom I should focus more after returning to my settings. Also, as part of the participant observation method, I increased my introspectiveness. By looking within myself and how I felt about participating in some activities, I was enriching the data (see Spradley, 1980).

The choices I made on how to collect data, what specific activities were important for the school-garden collaboration, and how and when to participate in the activities, varied and changed over time according to opportunities arising in the field but also they were influenced by the participants. For example, in the beginning of my fieldwork, I was observing the preparation work of Cherry Tree Primary class 4 visit to Wakehurst. During the classroom activity, one day before their visit to Wakehurst, the teacher introduced me and my research to the pupils and also my role as an observer participant in school and in the gardens.

> The teacher told the pupils about my presence and the fact that I would be with them for the visit to Wakehurst Place, the teacher mentioned that I may walk with them from the school to Wakehurst. I answered probably not because I usually help the teachers. But I've started thinking that maybe it is a good idea (Fieldnotes, 16/10/2006).

Since that idea was actually 'thrown into' my methodological choices for the data collection, I decided to take it on board, to accompany the pupils from school to Wakehurst Place. Of course that choice meant that I would not help the educator in the

morning which may have given me some information on the visit, interesting things to observe or have a more general chat with the educator. On the other hand walking with the pupils to Wakehurst provided me a better picture of the pupils' whole experience of a school visit to the gardens. I had the experience that walking to the gardens may be tiring sometimes for the pupils, especially on the way back after the visit, but it can be fun as well especially in a rainy day, all the pupils love jumping into the puddles and love a bit of adventure like climbing the public path gate which becomes an imaginary obstacle they have to overcome in order to reach the gardens.

Becoming a participant observer was a learning process for me which included learning how to enter the communities of practice of Wakehurst and the schools as well. For example, although I did not follow officially a Wakehurst volunteer training programme, I was accepted as a volunteer in an informal way; initially I observed the school visits, and later, I was involved in a rather spontaneous, natural way in the visit activities as a volunteer.

> I observed today a school visit from a secondary school, 60 students in total. The visit was lead by the educator Michelle who was explaining to the volunteers in the morning what the activities would be like so that they would be able to help the students. My role was quite unsure. I was not listening too carefully to Michelle's instructions, so when I was to told to be more active and be responsible for one group to do the activities I was quite lost. I must be more prepared to have a more active role during the activities (Research diary, 20/9/2006 – first days of the fieldwork).

That excerpt also illustrates the skills that the fieldwork of an ethnographic case study research requires, i.e. the researcher being able to step up to the circumstances, and adapt their role according to the emerging opportunities and/or challenges.

In addition, I was observing other school visits apart from my research schools, so that I could develop and sharpen my observational skill and my understanding of collaboration and learning process by comparing with what other schools do. These observations were also crucial because I was less anxious about observing everything possible and in a structured way, so it was an opportunity to collect data in a more intuitive, free style way.

❖ Fieldnotes – Record keeping

As part of the participant observation method, the tools I used to collect the data included keeping fieldnotes, taking pictures, voice recording many of the activities, and collecting artifacts such as copies of the worksheets and any relevant teacher resources.

Fieldnotes are representations of passing events, people, places, situations that are reduced to written accounts which can be reviewed and studied over and over again (Geertz, 1975; Emerson *et al.,* 2001). The way I kept fieldnotes varied. In some cases I would keep fieldnotes while I was observing the events happening, while in other occasions I would prefer to participate in the events, so that to accomplish immersion in what was happening, and keep notes later on, usually during the night time.

Fieldnotes also incorporated my research diary which initially included thoughts and feelings on my everyday life in the field, and especially my stress and anxiety, and later on it developed into a systematic recording of informal data and reflections on my everyday experiences, like an initial data analysis. Emerson *et al.,* (2001, p.361) noted that 'although the primary purpose of writing fieldnotes is to describe situations, events and people's understandings, they also provide the first critical opportunity to write down and hence to develop initial interpretation and analyses'.

Last, but not least, special attention should be given to the conversations occurring in the field which were also recorded partly in the fieldnotes. By immersing myself in the field I realised the importance of some natural occurring conversations such as conversations between the educators during the preparation for a school visit. I would also appreciate informal conversations I initiated with my research participants. Silverman (2006, pp.203-4) notes that 'although we may be inclined to think of conversation as trivial, merely talk, it is worth reflecting that conversation is the primary medium through which social interaction takes place'. Sometimes I would scribble down descriptions or parts of these conversations but later on when I had established rapport with my research participants I tended to ask them even to voice record what was going on, so that I would have more accurate and detailed information.

Interviews – Interviewing

By using both participant observation and interviews during my fieldwork I was trying to record what was happening during the interactions of my research participants. What the interviews added to the data was the fact that I had more control and I could target the content of the interviews according to my interests. I was especially interested in other people's views on the events I had observed myself (Stake, 1995). As Le Compte & Schensul (1999a, pp.85-86) have commented, 'qualitative researchers take pride in discovering and portraying the multiple views of the case. The interview is the main road to multiple realities'.

> The interview is one of the main data collection tools in qualitative research. It is a very good way of accessing people's perceptions, meanings, definitions of situations, and constructions of reality. It is also one of the most powerful ways we have of understanding others and other people's constructions of reality (Punch, 2005, p.168).

My interviews fulfilled different purposes (see Cohen *et al.,* 2005); they were one of the main means of gathering data directly related to the research questions i.e. about the school-garden collaboration and the learning experiences and also they were complementary to the other methods used during my fieldwork in the sense that they may have questioned the validity of my observations or even my interpretations (more details on validity will follow).

Building rapport with my interviewees was an important factor for conducting the interviews (Hammersley & Atkinson, 2007). Since I was interviewing people with whom I had already established relationships through participant observation, little further work was required. By participating in everyday activities at my research settings I developed familiarity with my research participants which was contributing to creating a comfortable and friendly atmosphere during my interviews (Cohen *et al.,* 2005; Hammersley & Atkinson, 2007).

Before I moved my life to Wakehurst I had anxiously prepared a data collection toolkit. The interviews at the beginning of my fieldwork were semi-structured, including sets of open-ended questions. The less formal or semi-structured interviews allowed me to

modify the sequence of questions, change the wording, explain them or add to them during the actual conduct of the interview (Cohen *et al.,* 2005). By interviewing both adults and children I was trying to make sense of what had happened during the interactions of the schools and Wakehurst through the eyes of the participants. Each set of interview questions was different for each category of the participants: teachers, pupils (reception to Yr6), educators, volunteers, and other Wakehurst staff, and they were developed according to my research questions and adapted to the age of the interviewees (see Appendix 7 for the initial set of questions I used for the interviews).

From the beginning I had decided to separately interview adults and children. I conducted individual interviews with the adults and that made them feel more comfortable about expressing their points of view and not being judged by other participants, and I could also focus on and obtain a better insight of what has happened from each individual's perspective. I decided to conduct the pupils' interviews as group interviews, three girls and three boys, mixed abilities, from each class, participating in activities related to the collaboration of Wakehurst and their school. The group size of six was suggested from the literature (see Cohen *et al.,* 2005), as appropriate so as not to put too much pressure on individuals and so that the group would not lose focus as could happen in a bigger size group.

Group interviews are useful in the situation where a group of people have been working together for some time or are gathering for a common purpose and in this case that means pupils having a common experience such a visit to the gardens. I also took account of the practical factor that group interviews are often quicker than individual interviews and hence time-saving (Cohen *et al.,* 2005; Fontana & Frey, 2005; Wellington, 2004). But the main reason for conducting the group interviews with the pupils was an ethical one, so that the pupils would feel more safe and comfortable in the presence of their peers in the room (Hammersley & Atkinson, 2007). The advantages of the group interview outweighed the disadvantages such as the risk that the group can be dominated by one person which will suppress others' voices and also that the requirements for the interviewer skills are greater than those for individual interviewing because of the group dynamics that are present (Fontana & Frey, 2005; Wellington, 2004). Other issues I encountered during the pupil interviews were to overcome pupils' poor memories, for example by using pictures to encourage reflection, how to keep teachers away from the interview process, and how to keep the pupil motivation to answer the questions for example by showing appreciation of their responses so that they would not worry about being exposed in front of their friends (Cohen *et al.,* 2005). In addition, I realised in the

first stages of my fieldwork that I had to change the style of interviewing for the younger pupils (Yr1&2) in order to engage them in the interview process and obtain data. For that reason I simplified the questions and the school teachers also reviewed them and suggested changes. Moreover, I had to employ an element of activity for the younger ones to keep them more interested in the interview, so I adopted a role play with finger puppets for them. In the following excerpt the teacher gave me advice on interviewing the younger pupils:

> **Esther:** I am sorry if they didn't answer the questions. And even if you need to come back here and do some more questioning and just sit outside take one by one and talk with them rather than doing it in a big group cause behaviour probably isn't brilliant. So maybe you just take the seedlings outside on a table (an activity the pupils did at Wakehurst) and set yourself out there in the afternoon and just talk to them. But go along the way the Wakehurst educator did the activities. Talk to them; you'll never going to get out of them 'what you think you learned now, that you didn't know before?' If you want to get that information from them, do these things with them; say for example: before you started school have you ever planted anything? Or 'before starting school do you work in the garden with mummy? Or when you went to pre school did you plant anything? So, think about how you are going to ask all the questions that's the main thing (Interview with Cherry Tree Primary teacher, 9/5/2007).

I started to get teachers' feedback on my methods during the second half of the fieldwork. As the teachers got to know more about my research, and what I was trying to find out, they acquired sufficient background knowledge to build upon using their experience and expertise. Also, having overcome the access to the settings problems, the teachers had become more supportive towards my research and were willing to make constructive comments that would help me obtain valuable data.

As the fieldwork went on, the interview questions were still related to the garden-school collaboration and the learning experiences, but eventually the interviewees commented more generally on their experience in the gardens. As I interviewed the same people more than once during the fieldwork – even four times some of them – my interviews with them became more unstructured; in addition I did not have to ask them the same introductory questions regarding their background or their views in outdoor education. So, I used the interview time to focus on the collaborative experiences and asking them questions around what I observed, even using their point of view to validate my observations or to find something that I did not notice during the visits. The interviews

became less formal and I raised a number of key issues in conversational style (Cohen *et al.*, 2005).

The type of unstructured interviewing which resulted partly from my confidence and experience in the field could be described as ethnographic interviewing. Ethnographic interviewing is flexible enough so that 'the structure and path of the interview will be dictated as much by the respondent as by the questioner. Roles may be revised or reversed if a true rapport is established' (Wellington, 2004, p.75). Many times my interviewees would ask me about my background and my interest in conducting the specific research and also would reverse the questions I was asking them, and would acquire my personal opinion on the events I had been observing. Part of the ethnographic interviewing became the in-depth interviewing I conducted with some of the key informants of my research such as Michelle, a Wakehurst educator, or some of the school teachers (Bogdan, 1980). In addition, as the collaborative activities varied, for example from school visits to Wakehurst, to outreach projects in the schools, and also to other interviewees such as the gardeners and the arboretum unit staff, I had to adjust my questioning. Punch (2005, p.175) has argued that 'the more unstructured the interview, the more communication skills in general, and listening in particular, are important'. The rapport I developed with my research participants made it easier for me to apply those skills.

The ethnographic interviewing benefited further my research because the interviewees felt more comfortable to discuss issues and disclose information rather than feeling they were being interrogated in a formal manner. Also, the ethnographic interviewing allowed me an openness so that I could explore the assumptions I was developing in relation to my research questions. For example, while in the field, I noticed that individuals' relationships and interactions seemed to be an important element in the garden-school collaboration, and so I directed my questioning with my research participants so that I would uncover more details on the role of personal relationships, how they worked and the influence they had on interorganisational collaboration. As a result an important part of my data analysis is on 'Individual collaboration' (see Chapter 7).

4.3.3. Reflections on the methodology and limitations of the research

The limitations of the methodological choices I made should be also acknowledged. In particular, owing to time and financial resource restrictions, the data collection for the purposes of this ethnographic case study took place during one school year period. However, the collaborations under investigation were chosen because of the relationship that Wakehurst had built up over the years with the local schools. The selected research design allowed me to examine the phenomena as they happened, which may be highly influenced by how the organisations collaborated in the past. I could only obtain information about the past interactions through the participants' recollections during the interviews. Possibly, a narrative analysis methodology would have allowed me a more in-depth understanding on the history of the collaborations.

A fieldwork overview should not omit reference to my failures, for example, missing many of the planning meetings for the preparation of the school visits, between educators and teachers. This is partly due to misunderstandings, ineffective communication with my informants, and also because of my absence from the field when no school visits were about to happen. Overcoming my frustration, I managed to obtain information regarding these events through my interviews. Also as I was on my own, in some cases I had to choose to observe some activities in one setting and miss at the same time some other activities going on in another setting, also related to my topic. I used interviews in these cases to obtain information about the events I missed from the people who were there, including pupils, teachers, educators and volunteers.

Interviewing parents is one of the things that could have provided my research with valuable data. Parents' views on the collaboration of the schools with the gardens were occasionally mentioned by the educators and teachers. The educators particularly highlighted the value of having parent helpers during the visit and their contribution to the pupils' experiences. Teachers were concerned about the parents' views on the school visits and how much the parents valued the pupils' experiences, because they were contributing financially for their children to go on the school trip. Teachers also mentioned that, in regard to pupils' learning, parents would have been more appropriate to ask, because often the pupils would go home and discuss their school visits rather than speaking to the teacher. Some parents may also have been a good source of information about the environmental attitude and behaviours of the pupils as well. Also, taking into

account the time and financial constrains of the endeavour, I had to make choices about what was practicable for me to do in terms of both data collection and data analysis and for that reason parents were excluded from my sample. In addition, as far as investigating the environmental learning experiences is concerned, data on students' learning from experiences out of school, e.g. family, friends etc. would also have been helpful in order to understand how students use their prior knowledge and experience to make meaning of their experiences in the gardens. Again, because of time and financial restrictions that was not possible. However, some of the interview questions with the students and their teachers have shed some light upon these issues.

Another limitation of my research also concerns learning. Learning as a process and outcome is a difficult subject to investigate. First of all identifying when the learning takes place by observation is difficult. How much of what is taught is actually learned? In addition, learning may happen in the gardens even if it is not planned. I can recall only a few instances where the comments the pupils made during the visit showed with certainty that they had learned. Learning is mainly an internalised process often not visible to other people, and often not even realised by the individuals themselves. By discussing and interviewing my research participants I tried to gain more information regarding pupil learning. Moreover, even when questioning people about what they thought they had learned, the answers are not always straightforward. One teacher characteristically explained to me that sometimes to recall what we learned from one experience we need another stimuli that will bring up to our memory of previous learning. Falk & Dierking (2000) argue that learning develops over time and hence it is difficult to locate it in a specific moment in time (for more discussion on investigating learning see 8.5.3). In addition Joyce, a Cherry Tree Primary teacher, argued that for pupils sometimes it is a matter of confidence to express what they learned as a result of an experience such as a visit to the gardens.

> **Joyce:** the thing with children is that even if you ask them, they seem they don't know, but they do know. But some of that is the confidence to speak and to say, and acknowledge what they know, and what they absorb. When they go on these trips they absorb information and they take it in, and some of it will make connections with stuff already in their brain, some of it can be apparent much later, and some of it will be immediately. So some of them will be able to talk quite capably and quite openly about what they've learned, and others won't; others will be much more unsure about what they actually think you want them to answer. They actually think there is only one right or wrong answer; it will take them a bit of time to realise. For example Fern, who I don't think she gave you much information about what she learned from the trips, well apparently she went

> home from both the trips and she was telling her parents everything about the trips and she wrote me a report about what she learned and that's quite powerful you know, but it's not spoken (Interview with Joyce, Cherry Tree Primary teacher, 3/11/2006).

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Taking into consideration that learning develops over time, students may not be able to identify their learning immediately after their experiences in the gardens, but they may reflect on the experiences in the future and realise what they have learned. My fieldwork had time limits, and, because of this the data that I could have obtained on students' learning is also limited.

Joyce also, commented that the pupils in her class are quite immature in terms of their speaking ability and expressing themselves and that they are more confident with writing, so maybe getting them to write about their experiences in the gardens would have been a more successful method to provide data on learning. During my interviews with the pupils, I showed them pictures from their experiences at Wakehurst as stimuli for their memory so that they would recall what they learned. Falk & Dierking (2000) also identify the difficulties of investigating learning which they characterise as an 'elusive' topic, and argue that documenting learning in museums has proven challenging. The complexity of learning in informal education settings justifies the difficulties I encountered during my fieldwork at identifying when learning was occurring. Falk & Dierking (2000, p.8) explain:

> learning from museums involves a wide variety of variables, some of which relate to the exhibitions and programmes and many that do not. Why visitors come, with whom they visit and for what reasons, what they already know, what their interests are, what their prior museum experiences are, and what subsequent reinforcing events occur in their lives play as great a role in learning – if not a greater one- as anything that happens inside the museum.

4.4. Ethics

Consideration of ethical issues should penetrate the whole research process from research design, to data gathering, data analysis and writing. The professional associations related to the researcher's discipline set guidelines to try to ensure that specific ethical procedures will be kept (Silverman, 2006). During the whole process of my research I

consulted and followed the British Educational Research Association (BERA, 2004) Revised Ethical Guidelines for Educational Research. There was not a fixed procedure – ethical committee – operating in my department at the time, but the MPhil/PhD transfer process acted as an ethics scrutiny forum. As part of the transfer process I presented my research questions and how I was going to pursue them in the field to Department of Education academics who by their comments and their permission certified that my research was compliant with the research codes, and could be conducted.

As a researcher I tried to operate within an ethic of respect for the people and the organizations and communities that were involved in my research. First of all, I ensured that all of my school research settings and the gardens acknowledged and agreed with the aims and the methods of my research. I organised a meeting in May 2006 with my supervisor, the head of the Wakehurst learning programme and with representatives from the three schools to explain my research to them and ensure access to their settings. All the representatives of my settings agreed and signed a Memorandum of Understanding (MoU) – the document set out guidelines as to roles and responsibilities of all participants in my PhD research (see Appendix 5). Through this, the teachers and the educators were informed about my research.

Whenever I conducted observations or interviews at the beginning of the activities, I always informed the participants the reasons for my presence and asked their permission and agreement to participate in my research. I gave a detailed but non-technical account (in a format that they could understand) of the nature and aims of my research. I also highlighted to the participants their right to withdraw from my research for any reason and at any time. Additionally, in terms of informed consent, long before the children were going to participate in my research I sent a letter seeking consent for their parents to sign (Appendix 6). For the pupils whose parents did not give consent I had arranged with the teacher not to come in contact with or include them in my photographs. They were not interviewed.

In order to make sure that I complied with the legal requirements in relation to working with school children I was checked by the Criminal Records Bureau (CRB) and received an enhanced Criminal Record Certificate. A copy of the certificate had been given to all my research settings and in addition I informed the parents through my letter about my CRB check.

I continually tried to create a friendly atmosphere with participants so that they would not experience distress or discomfort during my research and especially during the interviews. I recognized the busy schedule of my participants, especially the teachers, so I was trying to be as discrete as possible when asking them for their time, and keeping their questions to the minimum.

As 'the confidential and anonymous treatment of participants' data is considered as the norm for the conduct of the research' (BERA, 2004, p.8), I informed all my participants that the information they were going to give me would be confidential and their anonymity will be ensured. In the thesis, all names of individuals and names of the schools studied have been changed for reasons of anonymity.

In some cases I was asked to confirm anonymity and confidentiality twice, so that the interviewer felt more comfortable, and in one case I was asked to turn off my voice recorder as my interviewee criticized one educator's practice. On another occasion I was asked to evaluate one educator's teaching practice which I avoided for ethical reasons. My research purpose is to understand the learning processes not to evaluate Wakehurst's learning programme. On the other hand, I could make some general recommendations for improving learning programme practices, but without pointing to specific people. However, Barbour (2010) challenges the ethics of ethnographic research conducted in classrooms, and the decision of the researcher not to intervene when coming across teacher's unprofessionalism, such as lack of planning, lack of direction, or pedagogical variation which leads to students being disadvantaged and demotivated to learn. The reasons that a researcher may choose not to intervene in those cases, and not to be the whistle blower might be a concern that they will dissatisfy the gatekeepers to their research settings, and jeopardise the future of the fieldwork, and even damage their future career, especially if the researcher has been working in the educational setting where they have been conducting the research. In that case, the argument that the purpose of the ethnographic study is to observe the cultures and practices in the classrooms at their most natural, and should avoid intervening to the events and situations encountered, might seem as an excuse for the researcher to avoid causing discomfort and breaking the researcher's relationship with the research participants (ibid). Badiou (2002 in Barbour, 2010. p. 169) stresses:

> we can sit back and record what we see and hear and bracket off any disturbing and uncomfortable data. But, not only may there then be a dilution of the research, we also risk discarding our ethical obligations to those whose truth needs disclosing through our commitment to them.

During the fieldwork, I rarely had to consider such ethical issues. I did observe some educational practices in the gardens that could be regarded as professional slips, but these did not constitute a consistent element of the educators' practices, neither did they reveal patterns of behaviour that led to students being disadvantaged. However, I did point out some issues, such as when pupils did activities during a school visit in the gardens that they had experienced on a previous visit resulting in students and teachers becoming dissatisfied. I decided to raise that issue when I went back to the gardens in the end of September 2007, to present to educators and volunteers the preliminary findings of my research. That way I alerted the staff of Wakehurst of the issue without pointing out specific individuals. I became more concerned in terms of my ethical obligations, when I observed a particular educator being disorganised on a few occasions. As I had developed a good personal relationship with that educator, I found it hard to talk to her about the failures of her practices, or discuss my observations with any other educators. Barbour's (2010) point, as presented above, is relevant to my concern that by revealing misconduct of educators' practices my fieldwork could be jeopardised, and would cause discomfort to my research participants. I was rather relieved when I heard towards the end of the fieldwork that the specific educator had been dismissed, but even at that point I did not reveal my own observations. Reflecting back to the fieldwork, if I had the opportunity to go back in time, I would probably have chosen to discuss the situation with the educator and in particular explain the students and teachers' reactions during the interviews after the visit, which could then have encouraged the educator to reflect on what happened, rather than my pointing out my judgements based solely on my observations of the events.

Furthermore, as part of my ethical considerations, when I presented part of my work at conferences, I provided the participants with the paper of the presentation (always keeping the anonymity). Although I did not offer any kind of reward to my research participants in order to convince them to participate in my research, I felt obliged to them for allowing me to conduct my research. For that reason when it was possible, I would try to recompense them by contributing something in their everyday practices like for example I would give some record-pictures I had taken from the visit to the school for their archives or for any uses as material in the class; I would arrange to transport some resources from the Gardens to the schools or help with the transportation or I would do some volunteering in the gardens and schools, when extra help was needed.

4.5. Criteria for assessing/establishing the quality of my research

According to Silverman (2006, p.310),

> unless you can convince your audience that the procedures you used did ensure that your methods were reliable and that your conclusions were valid, there is little point in aiming to conclude a research study.

There is an ongoing debate whether the criteria of validity and reliability defined by quantitative research can be applied in qualitative research as well. There is some ambiguity in the use of these terms (Wellington, 2004) but they identify important considerations in the assessment of research. Guba & Lincoln (1994) reject applying reliability and validity in qualitative research, because the terms are based on the realist perspective that a single absolute account of social reality is feasible. They claim that qualitative studies should be judged by different criteria from those used by quantitative researchers such as trustworthiness and its components, credibility, transferability, and confirmability. I shall employ these terms in order to establish the rigour of my study, avoid anecdotalism, and ascertain the quality of my research in a way that is compatible with the principles and standards of qualitative research.

It is worth discussing whether issues of reliability apply to my research, however. Reliability criteria concern 'whether the process of study is consistent, reasonably stable over time and across researchers and methods' (Miles & Huberman, 1994, p.278). I shall not claim that my research can be replicated, or result in the same findings. If another researcher conducts my investigation using the same methodology, I would not expect them to come up with the same data or conclusions. As my research is qualitative, and is investigating people's actions and perceptions, these cannot be controlled in order to produce the same results if it were replicated (Hammersley, 1992). That kind of control is out of the scope of my research. Instead I am investigating naturally occurring behaviour which requires minimizing my impact on my research participants whenever it is possible, or at least acknowledging my impact when it occurs – usually non deliberate – and the inferences it has on my findings.

I will continue describing how I established the trustworthiness of my study by reference to its components i.e. credibility (parallel to internal validity), transferability (parallel to

external validity), and confirmability (parallel to objectivity) (Bryman, 2004; Wellington, 2004).

4.5.1. Credibility

Accepting that there are 'several possible accounts of an aspect of social reality (Bryman, 2004, p.275) it is the plausibility or credibility of the account at which I will arrive that is going to determine the acceptability of the results to others. Credibility applies to both the data collection and the data analysis methods. Credibility has commonalities with the criteria of internal validity and refers to the internal logic and consistency of my research (Punch, 2005). It is important to establish the extent to which my accounts accurately represent the social phenomena to which they will refer i.e. how the school-garden collaborations take place and how learning occurs (Hammersley, 1992; Cohen *et al.,* 2005). In more detail, I will explain whether my claims are plausible based on the data, and adopting the theoretical stance that people create multiple social worlds or realities. As Hammersley (1992) notes people's views on the same phenomena may be contradictory some times but are equally 'true' in their own terms. In order to establish the accuracy of my findings i.e. that they actually represent what I am claiming to investigate, I applied triangulation and respondent validation.

Triangulation

For the purpose of representing more accurately the phenomena I investigated, and supporting my findings, I employed more than one method or source of data, a technique called triangulation (Bryman, 2004; Cohen *et al.,* 2005; Wellington, 2004). I also used triangulation as a way to minimise bias with my findings because of the risk of becoming 'native' after being immersed in the everyday life of my research settings (Cohen *et al.,* 2005). By applying two types of triangulation, data and methodological triangulation, that were built into my fieldwork, I demonstrate how I used various means to arrive at my conclusions and support my claims. I do not regard triangulation as a way to get to the truth but as 'a strategy that adds rigor, breadth, complexity, richness and depth to any inquiry' (Denzin & Lincoln, 2000, p.5).

Data triangulation was applied by collecting data around the same events and the same issues from different people. For example, in the school visits I interviewed pupils, educators, teachers and volunteers. In other projects such as the Billionth Seed and the Wild View I interviewed all the different participants (e.g. head of the arboretum unit, educators, a teaching assistant). In order to enhance the data, I asked each one to comment on other people's experiences as well. Simply aggregating data from different sources to produce a more accurate picture can be problematic, for example in cases where participants' views could not be related or they were contradicting each other. These cases can still be important, and add a different perspective in the research (Hammersley & Atkinson, 2007). Triangulation in that sense, became the search for additional interpretations rather than the confirmation of a single meaning (Stake, 1995). I did have contradictory comments in some cases and for that reason I tried to interpret and explain these. It was very helpful to be able to add my own observations to interpret my participants' views on the events and that is the second type of triangulation I applied i.e. the use of multiple methods (Hammersley & Atkinson, 2007). In particular, I used participant observation, semi-structured and unstructured interviews and documents, artifacts, pictures, all in combination to investigate the same activities. They are all complementary to each other, providing rich data for my research. For example, as noted earlier, during my participant observation some events, related to my research, were happening at the same time but in different location and I managed to be informed about through interviewing people. Furthermore, I could check my interpretation of my observations by asking the participants to comment on my findings during the interviews. The combination of the different methods provided a basis for checking interpretations or checking that my interpretation matched and reflected the participants' views and attitudes, although that is not always plausible or even desirable (Hammersley & Atkinson, 2007; Wellington, 2004). The underlying assumption is that if the data obtained by all these different methods correspond, and lead to the same or similar conclusions, then the credibility of the findings has been established (Hammersley & Atkinson, 2007; Yin, 2009). Obviously, triangulation applies to my data analysis methods as well. Using thematic analysis (see 4.6. for explanation of my data analysis method), I will examine the data from both different people, and different sources, to identify common themes that lead to and support my conclusions.

Respondent validation

I provided the research participants with an account of my findings which is a process that can enhance the credibility of the findings and is known as respondent validation (Stake, 1995; Hammersley & Atkinson, 2007; Bryman, 2004). During my fieldwork I regularly met Michelle, the key educator of Wakehurst Place, during mornings usually, and discussed my findings with her. She would comment on my interpretations, add her own view and also stimulate my data collection further. As her position and experience in the learning programme is of great importance she provided me with insights which I could not have obtained by myself.

For instance, the Cherry Tree Primary class 5, spring visit to Wakehurst was based on revision of plant science, and was a preparation for the SATs exams. As part of the visit, Margaret, an educator, did a trail on the life cycle of plants. The teacher during the interview afterwards, expressed his satisfaction with the visit outcomes but he noted that he did not see the usefulness of the trail. After that comment I remembered that other teachers in some cases had expressed dissatisfaction with the trail, for example that it seems that every time they do a trail at Wakehurst it is the same activity. I discussed that issue with Michelle, and also my lack of understanding of how the trails are designed at Wakehurst. Michelle, explained to me the different learning objectives of different trails, how they are linked with workshops but she also noted that possibly some educators do not do the trails properly and more training is needed for the educators so that they will be more clear on the purposes of the trails and the learning intentions. She also commented that possibly the teacher may not have paid attention during the trail and that was the reason for not understanding the value of the specific activity, especially as the educator leading the specific visit is very clear on her objectives from the activities she delivers in the gardens, and very effective in communicating them to the pupils. I also remembered Margaret saying that the trail did not work perfectly because of the weather. For example, when she dashed the conifers catkins the pollen should be visible flying around but they were not because it had been raining before and the pollen did not move.

The above incident is an example of not only triangulating different people's views on the activity, i.e. the trails, but also that by discussing an incident with Michelle, I could reflect on my interpretation and understand better the events. That incident also raised a variety of issues in relation to collaboration and the different interpretations can be applied. The teachers' lack of understanding of the usefulness of the trails can be

attributed to weak collaboration between the teacher and the educator. During the planning meeting the educator and the teacher come together to discuss and plan the activities based on learning objectives. During the above incident, the teacher who has lost his enthusiasm from the collaboration (that issue will be addressed further in the next data analysis chapter) chose not to have a planning meeting and hence was not aware of the reason behind the trail activity. The failure of the trail activity can also be attributed to the season factor as well. The specific visit took place in early March, a time of the year that the garden lacks blossom, fruits and when most of the deciduous trees are just starting to grow their new foliage. As a result a trail outdoors might not be as exciting and interesting as it can be in other seasons and that also contributed to the teachers' disappointment. The need for more educator training is also essential as I had noticed during my observations of other school visits that some educators did not have clear objectives when they implemented the trails which of course resulted in students not getting enough focus during the activities and the teachers not understanding the purpose of the trails. Looking at how many different factors can influence the success of an activity in the gardens, and how many different perspectives can be valid at the same time, also shows limitations of having the validation of my interpretations from specific research participants, rather than from all of them.

There was a more formal way of respondent validation when I organised a more obvious, purposive process after finishing my fieldwork. Specifically, in the last week of September 2007, I returned to my research settings to present part of my findings. I had finished transcriptions and already begun my data analysis. I did one presentation to the garden educators and volunteers and one for Cherry Tree Primary teachers, the school which has a close collaboration with Wakehurst Place. During the presentations I asked the audience to give me feedback on my findings and check whether my conclusions conformed to their experience (Silverman, 2006). Abrahams (1984 in Silverman 2006, p.293) has commented that this kind of validation can be possible only when the research findings are 'compatible with the self-image of the respondents'. Indeed I was concerned in preparing my presentation that I would get some objections to my interpretation of the data especially regarding environmental issues. I was criticising the garden educators in saying that, although environmental issues are prioritized in the botanic gardens' mission statement, in practice they are often ignored or superficially referred to during a school visit. The responses from the audience supported my claims, however.

The process of respondent validation should also be taken as a valuable source of further data and insight (Hammersley & Atkinson, 2007; Silverman, 2006). During the

presentations, I engaged the participants in small group discussion on issues arising from my findings, and that discussion provided me with valuable data. For example, the educators prompted by my findings added that the close collaboration of one my research schools with Wakehurst, which results in multi visits during the school year, brings pressure to the gardens educators to deliver each time something different to the pupils. Also, the educators have to satisfy different expectations and demands; teachers may expect to have a day off while the educator has to fulfil learning objectives related to the curriculum, and the children may be interested more in having a fun day in the gardens and value especially the lunch time. Importantly, these presentations were meant to provide some information to people in my research settings which they could use to improve their practices, engaging them in a dialogue and encouraging some collective thinking. From the educators' viewpoint at least I got very clear responses that during the presentation, but also throughout my fieldwork, I had encouraged them to reflect on their work.

Credibility is also related to the problem of anecdotalism, which can be avoided if I convince the reader that my findings are based on critical investigation of all data, and do not depend on a few well chosen examples (Silverman, 2005). That issue will be further addressed as I will make transparent my data analysis method i.e. thematic analysis. Respondent validation and triangulation may also be used to minimise the danger of anecdotalism.

4.5.2. Confirmability

The criterion of confirmability is described as the parallel of objectivity in quantitative research (Lincoln & Guba, 1994). Objectivity, according to Lincoln & Guba (2000, p.181) is a chimera: 'a mythological creature that never existed, save in the imaginations of those who believe that knowing can be separated from the knower'. And since objectivity is impossible in social research (Bryman, 2004), instead, I approached confirmability in my research by acknowledging and trying to minimize potential biases and errors occurring during my fieldwork and consequently influencing my findings. I explain, with examples below, how I ensured that my personal values, or even feelings have not swayed the conduct of my research and its findings.

Researcher's bias, the danger of becoming native

It should be noted that the issue is not whether the data are trustworthy or not, but whether the inferences drawn from them are (Hammersley & Atkinson, 2007). For that reason I tried continuously to be aware of how my presence could have determined the data I collected. First of all, there is the danger of 'becoming native' by being immersed in the field (Miles & Huberman, 1994; Fontana & Frey, 2005), and failing to identify important data. Guba & Lincoln (1994) recommend spending some time away from the field and indeed when collaboration activities did not take place, I returned to my university in Bath, which gave me some distance from the field, and time to reflect on the data I gathered and my methods, with less influence from the emotional attachment I developed by living in the gardens. From a distance, I had the opportunity to adopt an outsider's point of view, and have a more critical perspective on the way my fieldwork was progressing. Also, another way of avoiding bias from the effects of the sites on me was triangulation with several data collection methods, and by getting point of views from different participants on the same events/issues (Lincoln & Guba, 2000). The following excerpt represents my reflective thinking on my relationship with my research participants and possibilities that my judgement would be influenced by the emotional attachment:

> Reflections on the interview with Michelle at her home: I am a bit critical to Michelle about how environmental issues are addressed in the gardens. She believes that they should be taught, but sometimes the educators don't have the time, or the teacher is very specific about what they want the visit to cover, and there is no space for environmental issues. She told me that she usually tries to do the activity 'Imagine the world without plants' but she also suggested that environmental issues are addressed in a 'roundabout' way and it is up to the teachers in the class to follow them up. I think Michelle is for me the model of a 'good educator' but her point of view on environmental issues is a point I am critical about, and for me that is a proof that I haven't lost my objectivity with the people of my research I appreciate (Research Diary, 25/6/2007).

Although the botanic garden mission entails raising people's environmental awareness, it became evident during the fieldwork that, in practice, that was not the priority for the educators when they were planning and implementing the educational activities in the gardens. I confirmed that finding during the interviews with various educators, and also when I went back to the gardens in September 2007 to discuss my findings with the research participants. I will examine the reasons for that attitude in the data analysis

chapters and I will also address any implications for environmental education in the gardens.

Focusing on my data analysis, again, I will highlight that in order to produce my findings, I did not rely only on my observations but by triangulation, using interviews or even other sources of data such as documents and photos, I corroborated my arguments. In cases where my observations did not match data from other sources, I would try to find why there was this mismatch or in other cases discard the argument as I had insufficient evidence to support it.

Checking for researcher effects

By entering the field I was aware of my position as an outsider in my research settings and thereafter of the risk of influencing reactions during the collection of the data (Miles & Huberman, 1994). My presence either in the garden or in the schools could influence the everyday activities of the people I observed, and especially motivate some extra activity; or during the interviews the interviewee could respond to my questions in a way that might please me. This phenomenon is described as reactivity (Hammersley & Atkinson, 2007). My immersion in the research setting played an important role in minimising those risks, and that came about in some cases by having lunch in the gardens' meeting area, by offering some help such as cleaning the educational resources after the day visit, or simply by hanging around. As my time in my settings progressed, and I developed relationships, I noticed a difference in attitudes to my research; for example, participants seemed more relaxed during the interviews while in the beginning they were cautious of my voice recording the interview.

Another way to reduce reactivity is by interviewing people in a more open-ended naturalistic way. As my fieldwork evolved, I tried to obtain data by questioning people in a less structured way during their activities. I was aiming to obtain information in a way that is less likely to influence responses, in a conversation style where the interviewee is allowed to talk at length in his or her own terms, as opposed to more directive questioning (Hammersley & Atkinson, 2007). In relation to the children, I tried to build a closer relationship with them by participating in some school activities like the gardening club or even participating in their play time during their visit to the gardens.

Possible bias or error in the data may occur through my informants' accounts. During interviews, the responses of interviewees mainly rely on memory rather on fieldnotes or audio recordings. Thus, there is the possible error of memory distortion (Hammersley, 1992). By cross checking my informants' accounts with my own observations, but also by asking for more detailed responses and clarifications, I tried to minimize this.

Influencing the participants' life and practices

My research does not take a positivistic perspective where the research is distant from the research object or try to stay as distant as possible not trying to influence the research participants' life. I knew that by my research, I may influence the way my participants viewed their own practice. I should also note that I was concerned sometimes about my role as a researcher 'forcing' in a way my presence into the life of my research settings, especially as it was not the schools or the gardens that specifically requested research as a way to improve their practices.

One example of influencing my participants' practices concerns how the trail activities are implemented in the gardens. I have referred previously to discussing how the trails were implemented during a school (see the section 'Respondent validation' above) with Michelle, a Wakehurst educator, asking her views on my observations. I discovered a few days later, that the conversations had an impact on the instructions and delivery of the trails. The following excerpt illustrates that:

> Today I volunteered for a secondary school visit to Wakehurst. In the morning, Michelle allocated the volunteers to the different activities. Then she gave the trail instructions to the volunteers but they didn't seem confident for leading the activity – when the number of pupils is high, they are split into groups, and usually some of the groups are lead by volunteers during the trail activities –. Michelle mentioned that because of my comments, she has spotted that more attention should be given to the trails. She explained what was the main objective of the trail to the volunteers, what she wanted the pupils to get from it, but she also said to them that they don't have to stick strictly to that but they could have their own input. She said that the trail is linked with the other activities, and the instructions with the map were quite clear. Judging from other previous visits that I had seen the educator allocating activities to volunteers and asking them to lead the trail, this time, the instructions were by far more clear, and the learning objectives explained to the volunteers (Research diary, 22/3/2007).

Another example is when I interviewed Elsa, a Wakehurst educator, about what she expected the pupils to learn during a specific visit. Elsa commented during the interview that in the school a teacher would have the learning intentions written on the board, but in the gardens the educators do not necessarily prominently specify learning objectives. And the educator after my interview noted:

> **Researcher:** thank you for giving me your time
>
> **Elsa:** actually it's quite nice, because I am thinking it's going to improve my teaching this (the interview process); I am going to be much more focused on my learning objectives next time. Because I thought I was quite good on it, but when I think back, I think now I need to be sharper. I am going to write it on every lesson plan now, and share it (Interview with Elsa, 19/3/2007).

After a few days, I met Elsa again and she told me how she reflected on her teaching as a result of my interviews, and especially making the learning objectives of the activities she is implementing more clear. I also noticed a difference in Elsa's practice when I observed how Elsa now gave instructions to the volunteers. She was very clear in her explanations. Elsa's comment on the contribution of my presence and my questioning to stimulating her reflection on her practices was also made by other educators. The issue that arises is that, without my presence and influence, how are educators encouraged to reflect on and improve their practices. During my fieldwork I noticed that the educators' and volunteers' meeting room was a space where people met on a daily basis and discussed issues that arose during the activities in the gardens, including how they could improve their performance. Also, the learning programme occasionally organises (twice or three times a year) meetings with the staff where they discuss how they could improve their practices. However, there is no process whereby the educators, for example, get feedback on how they have delivered the activities. Although I would not argue in favour of a formal evaluation process, where the educator is observed by another member of staff in order to get that kind of feedback (that process might been seen to be too close to an Ofsted inspection), I can argue that the collaboration with the schools, and especially teachers' opinion on how the visit went, may be a way to obtain that kind of constructive comments. That, of course, requires that the educator and the teacher have developed a relationship of trust and mutual enthusiasm to provide the students with high quality learning experiences in the gardens. In Chapters 6 and 7 I will refer to cases where that process did happen.

4.5.3. Transferability

The concept of generalisability comes from quantitative research and is normally achieved by statistical sampling procedures (Silverman, 2006). Such sampling procedures are usually unavailable in qualitative research and for that reason transferability is adopted as the equivalent criteria to establish the value of my research.

My research entails the intensive study of a small group of people either part of the Wakehurst learning programme or the local schools which means 'depth rather than the breadth' (Bryman, 2004, p.275). By consolidating fieldnotes, observation voice recordings, interview transcripts, my research diary notes, documents relative to the educational activities, and records of other more spontaneous conversations naturally occurring in the field, I intend to present the data and my interpretation of them in the form of thick descriptions (Geertz, 1975) which I conceptualize as attempts at grasping an insight into garden-school collaborations and the learning that takes place as a result. By living in the gardens, I developed that kind of familiarity with my research context which contributes to more accurate explanation and interpretation of events. Thick descriptions may establish an empathetic understanding for the reader, convey to the reader 'what experience itself would convey' (Stake, 1995, p. 39). By producing thick descriptions I am aiming to provide the audience of my research with 'a database for making judgments about the possible transferability of findings to other milieu' (Guba & Lincoln, 1985 in Bryman, 2004, p.275), in order to stimulate their thinking and enhance their opportunities to learn (Stake, 1995).

The use of thick descriptions is just one way of establishing transferability. My findings will be also transferable if other readers can relate to what I did and what I found. The use of case study methodology is one way of doing this. The important point is that readers should be able to relate to 'the case'. So, giving sufficient information and details about the cases will enable the reader to not only understand but also identify commonalities to their practice or become inspired by the cases to change their practices.

Also, importantly, my findings can be regarded as transferable to the policy level. By illustrating what works in collaboration between botanic gardens with local schools i.e. the factors that contribute to the success of collaboration, and also important elements in the process of learning, the policy makers may find my points important enough to encourage others to adopt and implement them in their practice. My findings also will be

of interest to anyone working in settings outside the classroom, as the context of my research makes it transferable. Walford (2001b) has commented on the usefulness of ethnographic studies for providing insights into the effects of educational policies, drawing from Finch's (1986 in Walford, 2001b, p.2) point that 'ethnography is uniquely well suited to gathering data about the consequences and 'lived realities' of those involved in the implementation and reception of policy decisions at the local level'. Walford highlights the potentials of ethnographic research to investigate the 'unintended consequences as well as those planned by the policy' and the ability of the ethnographers to bring into the light tensions and contradictions in the policies and provide a much needed critique (ibid, p.3). I intend to look at botanic garden – school collaborations and the students' learning experiences in relation to educational policy in the UK, and especially the English national curriculum requirements. The recent developments in outdoor education will be seen in relation to the wider educational policy in the UK and potential tensions will be identified. The ethnographic case study methodology will enable me to get insights into the operationalisation of the policies in participants' practices, and their impact on the students' environmental learning experiences. Moreover, by making my findings transferable I intend to make suggestions for the policy implementation e.g. how schools by collaborating with botanic gardens can fulfil the 'Learning Outside the Classroom Manifesto' (DfES, 2006a) recommendations.

Hammersley (1992, p.56) defines research's function to 'produce knowledge that is of public relevance'. Considering that my research is an ethnographic case study, there is the issue of how a study of a small number of settings at a particular point in time, can have relevance for a wide audience. And more specifically, how my findings deriving from Wakehurst learning programme activity could be transferred or applied to other contexts or settings (Wellington, 2004). Throughout my fieldwork I had in my mind that one of my research goals is to provide information relevant to the wider world of botanic gardens education or even to other outdoor education settings. I used purposive sampling to establish my research relevance to contexts. Purposive sampling allows the researcher to choose a case because it illustrates some feature or process of interest (Silverman, 2006). I chose Wakehurst to conduct my research because of its well established educational programme, but also because it is managed by Kew Gardens so has a worldwide recognition and a close relationship with BGCI the international organization which determines guidelines including the education sector of the botanic gardens worldwide. The recognition of Kew Gardens provides a base for botanic educators at an international level, and a familiar context which they can easily recognize and trust and understand so that my research findings may make sense to them, in their own context.

Also importantly, as Oikawa (2000) has noted, the British botanic gardens have a leading development role in the botanic gardens education field and Kew gardens has definitely a valued position within that role. By investigating Wakehurst's work it is possible that the results of the research will be of interest to other botanic gardens worldwide.

Yin (1984, p.11) suggests that case studies are 'generalisable to theoretical propositions and not to populations or universes'. In this sense the case study does not represent a sample, like the experiment does; 'the goal is to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization). In analytic generalization a previously developed theory is used as a template with which to compare the empirical results of the case study' (Yin, 1984, p.32). During the data analysis I will relate the data to theoretical frameworks on collaboration and also to learning theories, and my goal is to expand the theories in a way that will fit outdoor education settings and schools relationships, and also fit learning in outdoor contexts and in relation to environmental issues. The development of theoretical framework(s) is one of the most important outcomes of my thesis and my main research contribution to both fields of outdoor and environmental education.

4.6. Data analysis

4.6.1. The need to make explicit the data analysis methods.

> Methods for the analysis of data need to be systematic, disciplined and able to be seen (and to be seen through, as in 'transparent') and described. A key question in assessing a piece of research is: how did the researcher get to these conclusions from these data? If there is no answer to this question – if the method of analysis cannot be described and scrutinised – it is difficult to know what confidence to have in the findings put forward' (Punch, 2005, p.195).

A diversity of methods of qualitative data analysis exist which in different ways 'transform, interpret and make sense of the qualitative data' (Punch, 2005). Explaining the process of data analysis, and the assumptions underlying the analysis is essential for evaluating the research and comparing or synthesizing it with other studies (Braun & Clarke, 2006; Anfara *et al.,* 2002). The need for clarifying the methods of qualitative

research and establishing the rigour of the qualitative approach compared to positivistic quantitative research, was highlighted with the publication of The Discovery of Grounded Theory: Strategies for Qualitative Research (Glaser & Strauss, 1967). Many publications followed trying to provide guidelines for collecting and analysing qualitative data. Despite the danger that qualitative research may become mechanistic, there is still the need to clarify the data analysis process that underpins the findings of an endeavour such as a PhD research. I am not aiming to provide a clear cut picture of guidelines I followed strictly during my data analysis as data analysis cannot be paralled with a recipe book for 'cooking data'. However, I will present ideas and processes I applied (how and why) from qualitative methods which I choose based on my research questions and the nature of the data, in order to develop my research findings.

Analysis is a process of examining something in order to find out what it is, and how it works. A researcher conducting an analysis can break apart a substance into its various components, then examine the components in order to identify their properties and dimensions. Then the researcher may use the acquired knowledge of those components to make inferences about the object as a whole. Without the background either from immersion in the data or professional experiential knowledge, the ability to recognise and give meaning is not there. Analysis is a dynamic process that requires brainstorming, trying out different ideas, eliminating ideas, and expanding upon others before arriving at any conclusions (Corbin & Strauss, 2008). Miles & Huberman (1994, pp.10,11) summarise the analysis of qualitative data in three flows of activity:

1. Data reduction entails 'selecting, focusing, simplifying, abstracting the data', organising them in a way that conclusions can be drawn.
2. Data display assembles data in an accessible way such as matrices, graphs, charts, so that the researcher can easily see what is happening
3. Conclusion drawing and verification, which may happen even during the fieldwork period, and entails findings becoming more explicit and being tested for their plausibility to establish their quality.

4.6.2. An inductive – deductive approach

Throughout my research I applied a combination of deductive and inductive reasoning which both apply to data collection and data analysis. LeCompte & Schensul (1999b), argue that bottom up, inductive thinking involves generalising from concrete data and

experience in the field, to more abstract or general principles. Thinking deductively, from the top down, involves applying more general or abstract ideas from theories that are relevant to the research field, to the concrete data that have been collected. At the same time, the researcher also formulates on-site assumptions that serve as initial explanations for data collection as it progresses.

I tried to keep an open mind and grasp issues emerging during the fieldwork (inductive process), however, even from the beginning of my research, in order to set up my research aims, I read the literature related to collaboration and learning in outdoor settings and hence I had expectations entering the field, ideas that were either to be confirmed or discarded during my experience in the botanic gardens (deductive process). My analysis was data driven as I identified themes by looking solely to the data and without trying to fit them to a pre-existing coding frame or my analytic perceptions. I cannot deny though as I mentioned above, that I had prior knowledge of the literature that may have influenced even if it was unintended, the way I looked at the data. Also helpful in keeping the inductive-deductive approach, was the fact that, after my data analysis, I went back to the literature to look specifically for more information, evidence from other research and concepts from developed theories that could be combined, and juxtaposed with my themes.

Trying to keep that balance between the two approaches, I was questioning myself when I was developing concepts/themes in relation to the data, i.e. are these concepts derived from data, or am I imposing these concepts on the data because I am so familiar with them? In the case where I identified concepts relevant to my research questions, I was asking how the concept is the same and/or different from that in the literature? (see also Corbin & Strauss, 2008).

Hammersley & Atkinson (2007, p.163) explain my attitude to the data analysis by acknowledging that

> analysis cannot but rely on the existing ideas of the researcher and those that he or she gets access to in the literature. What is important is that these ideas do not take the form of prejudgements, forcing interpretation of the data into their mould, but are instead used as resources to make sense of the data. This requires tolerating uncertainty and ambiguity and resisting the temptation to rush to determinate conclusions. In the early stages the aim is to use the data to think with. One looks to see whether any interesting patterns can be identified; whether anything stands out as surprising or puzzling; how the data relate to what one

> might have expected on the basis of common sense knowledge, official accounts, or previous theory.

Especially the use of multiple perspectives rather than a single theory or framework might be useful. Hammersley & Atkinson (2007, p. 165) suggest that

> what is important is asking 'What in these theories would permit me to comprehend the data?', and using the theories to provide focus for the analysis and for further fieldwork. Theories should not be taken as 'off-the-peg solutions to the research problem (ibid, p.165).

4.6.3. Analysis and fieldwork go hand in hand

Analysis was an ongoing process during my fieldwork, an approach often used in qualitative research (Corbin & Strauss, 2008; Charmaz & Mitchell, 2001; Hammersley & Atkinson, 2007). My research is an ethnographic case study, and although I started my fieldwork with a quite clear plan about how to collect data, by being immersed in the life of my research settings, I gradually started to develop ideas about the people I could obtain more data from, about more detail around issues related to my research questions and other events apart from the school visits to attend, and also about interviewing people related to garden-school collaborations such as the gardeners, other staff from the gardens, and people from the schools apart from the teachers. I usually noted my analytical insights in my research diary and decided to pay more attention respectively to issues I identified as being important or issues that my participants were stressing to me as important. The following excerpt is indicative of my reflection during the fieldwork, an informal analysis which guided my choices later during the fieldwork.

> During my visit to Oak Tree Primary today, it emerged to me that the collaboration can have many aspects. Other activities, apart from the visits, are also important for the collaboration of Wakehurst with the primary schools. For example, Michelle, the Wakehurst educator has asked Oak Tree Primary to visit the Gardens for an event they needed pupils to come in. As a return the pupils didn't have to pay for the visit. Moreover, Wakehurst has given trees for the school grounds of Elm Tree Primary. Or Wakehurst educator Ruth runs the nature club of the Elm Tree Primary. I think the collaboration is based on the enthusiasm of people and their personal relationships and passion rather than the interactions at the organisational level of the settings. But the organisation of the school and the Gardens provide either the facilities/back up or the 'channels'

> to the people – educators and teachers – to get in contact and develop their creativity by developing educational activities together (Research diary, 5/3/2007).

Corbin and Strauss (2008, p.57) explain:

> analysis is a process of generating, developing, and verifying concepts – a process that builds over time and with the acquisition of data. One derives concepts from the first pieces of data. These same concepts are compared for similarities and differences against the next set of data – either expanding concepts by adding new properties and dimensions of if there are new ideas in the data, adding new concepts to the list of concepts. Or there is still a third option of revising previous concepts if after looking at the new data it appears that another term would be more suitable. It is important to keep in mind that if a researcher knew all the relevant variables and relationships in data ahead of time, there would be no need to do a qualitative inquiry.

Furthermore, the idea of data analysis during fieldwork which entails the researcher gathering data, analysing them and returning to the field to gather further data and refine the emerging themes/concept/theoretical framework is a logic that also helps to overcome problems such as 'going native' and 'superficial random data collection' (Charmaz & Mitchell, 2001). During my research I spent short periods away from the field when the schools were closed for holidays. Those intervals were helpful to have a distance and think more clearly about possibilities I should investigate more when I returned to collect data. Fieldwork is a very demanding period and engaging in sustained data analysis alongside data collection may prove difficult in practice; for that reason even if I did not complete a formal data analysis in the field, it was important to record reflections on the data which I could use after the fieldwork to inform or even begin the data analysis as Hammersley & Atkinson (2007) suggest.

4.6.4. Transcription – another analytic phase

After finishing fieldwork, my work focused on transcribing the interviews and recordings I had from observing activities in my research settings. Transcribing the data was an opportunity to get closer to the data, and during the actual transcription to identify themes, and patterns, and come up with ideas about the meanings of the events I recorded. Braun & Clarke (2006) note that transcribing, which is a time consuming

process, informs the early stages of analysis and helps to develop a more thorough understanding of the data.

Transforming talk into written text is a representation that involves selection and reduction of the data. Transcribing discourse is an interpretive practice (Riessman, 1993) and the researcher selects what seems relevant and how detailed a transcription should be. The level of detail in the transcript depends upon the research question and the preferred analytical approach (Silverman, 2006). For example, discourse and conversation analysis require a more detailed transcription based on well established conventions (Hammersley & Atkinson, 2007). I transcribed all my interviews recordings and parts of observation recordings. I decided which parts of the school visits recordings I would transcribe based both on my fieldnotes and my interviewees' comments on interesting occurrences during the visit. I decided to analyse the data using a thematic analysis which does not require the same level of detail in the transcript as discourse[12] or conversation[13] analysis do, methods which focus more on the way people speak rather than what they say (Braun & Clarke, 2006). I included in the transcript some basic features of speech such as pauses, interruptions, where emphasis was placed by the speaker and expressions of hesitation or laughing as they added to the meaning making of the data.

4.6.5. Thematic Analysis

After having transcribed the data I started a more intense and coherent data analysis. I decided to apply a thematic analysis method which involves 'searching across the data to find repeated patterns of meaning' (Braun & Clarke, 2006, p.86) and which would provide the means to organise and make sense of all the different types of the data: from fieldnotes to photos and transcripts of interviews, and recordings of the school visits.

Thematic analysis is widely used in qualitative research (Boyatzis, 1998), and Braun & Clarke (2006) provide a step by step guide outlining six phases of thematic analysis, some

[12] Powers and Knapp (1990, p.40) define discourse analysis as 'an examination of language use - the assumptions that structure ways of talking and thinking about the topic of interest, and the social functions that the discourse serves'.

[13] Conversation analysis is mainly concerned with the organisation of talk (Silverman, 2005), focuses on naturally occurring data rather than experimental or researcher provoked data, and the analytic purpose is not to explain why people act as they do but to explicate how they do it (ten Have, 2007). Conversation analysis can be seen as a study of language-as-used, which means a study of 'oral language as actually used interactionally in 'natural' situations' (ibid, p.10).

of which are similar to phases of other qualitative data analysis methods. Thematic analysis is not restricted to any pre-existing theoretical framework and therefore it is flexible (Braun & Clarke, 2006) and compatible with my explorative research question and constructivist theoretical orientation. Other reasons for applying thematic analysis are that it can usefully summarize key features of a large body of data, offer a 'thick description' of the data set, highlight similarities and differences across the data set, and generate unanticipated insights as Braun & Clarke (2006) suggest. I shall explain how I employed thematic analysis as a six-phase process which was not linear but recursive, moving back and forth throughout the phases (Ely *et al.,* 1997 in Braun & Clarke, 2006).

Phase 1: becoming familiar with the data

In the beginning, my analysis was more like brainstorming which required time and immersion in the data until I reached a level of insight and sensitivity to nuance. Immersion involved repeated reading of the data to become familiar with the 'depth and breadth of the content', searching for patterns, note taking or marking ideas for coding as a basis for the next phases (Corbin & Strauss, 2008; Braun & Clarke, 2006).

Phase 2: generating initial codes

This phase involved the production of initial codes from the data. Through coding, I identified features of the data that appeared noteworthy to me. I took the data apart, looking at them with an analytic eye, and I started interacting with the data rather than my research participants (Charmaz & Mitchell, 2001; Braun & Clarke, 2006). I should point out that the initial codes differ from the units of analysis (the themes) which are often broader, and the development of themes means that the interpretative analysis of the data occurs in relation to the arguments that emerge (Boyatzis, 1998). In that process of breaking down the data, it was helpful to use Charmaz & Mitchell's (2001, p.65) explanation of coding as a synthesis for making comparisons between:

1. different people, objects, scenes or events (for example member's situations, actions, account, or experiences).
2. data from the same people, scenes, objects or type of event (individuals with themselves at different points in time).
3. incident with incident.

A researcher can think of coding as 'mining' the data, digging beneath the surface to discover the hidden treasures continued within data (Corbin & Strauss, 2008, p.66).

At this initial stage of the data analysis, generating codes, the application of constant comparisons, an analytic tool developed as part of grounded theory was also useful. By comparing incidents I was looking for similarities and differences and respectively categorising the data under the same or different codes. Also constant comparison within the same code, gave me the opportunity to uncover different properties and dimensions of the code. Hence, each incident has the potential to bring out different aspects of the same phenomenon (Corbin & Strauss, 2008).

What makes the raw data into findings is the act of signifying the concepts and their relationships according to Corbin & Strauss (2008). An important element of my data analysis as part of generating initial codes, was making memos. Memos are written records that contained my analytical thinking. My memos were more about conceptual ideas emerging from incidents rather than about the incidents themselves. During the transcription of the data, but more intensively during data coding, I started keeping notes about linking data from different sources under the same theme/concept, emphasising patterns in the data, things that were puzzling or surprising about a case (Miles & Huberman, 1994). Creating memos, which are regarded as a crucial step between coding and a first draft of presenting the research findings, was for me a free-writing exercise (Charmaz & Mitchell, 2001) when I was reading through the data, and was a first attempt to develop more abstract ideas based on the data, related to my research questions. In the following interview excerpt, I display an example of coding and memo making as part of data analysis, phase 2:

Joyce: the visit (on shelter building) we did yesterday, we also did it last year, and **I recommended it to the Sycamore Tree Primary school** who came in and did it last week. And we did it again yesterday, and I would say that yesterday's wasn't as good as last year's. I don't think the enthusiasm was as much as last year. Although they enjoyed themselves there wasn't,…had there **more gardeners being involved to get motivated, and maybe cause we had two dads last year who got everyone motivated cause they were really into it.** The activity itself is nice but it wasn't as good as we did it last year. That could be the children as well. **But as for collaboration yeah, I mean Michelle (educator) is really good to talk to**

Code 1: Diffusion of the collaboration, teachers spreading the word to other schools about the collaboration with Wakehurst

Code 2: Adults' helpers influencing the success of the visit

and work things through her, and you know that's an important part of it. We were able to agree what we were going to cut off and what is going to happen when adapt things because we knew exactly what our timetables were. And we did really communicate all that. So we knew what we were up to, and we were comfortable with each other (Interview with Cherry Tree Primary teacher Joyce, 27/3/2007).

Code 3: Detailed planning meeting

Memo: The detailed planning meeting, good communication, feeling comfortable with each other are indications of a good relationship between the teacher and the educator.

Phase 3: searching for themes

After producing a list of codes across the data, I went through the codes in order to sort them into themes/concepts which are regarded as the foundation for the analytic method. I examined the relationship between the codes, whether they could be combined under an overarching theme, or a sub-theme or I even discarded some of them. At that stage I had started to sense the importance and prevalence of particular issues (Braun & Clarke, 2006). Having adopted a combination of inductive-deductive approaches throughout my research, the codes and respectively the themes I identified were both data driven, emergent from my experience in the field, and theoretically driven, based on reading the literature. However I should highlight that the emerging ideas for codes and themes did not just happen but depended on the analytic work I put in as Hammersley & Atkinson (2007) note.

Phase 4: reviewing themes

After having identified potential themes, I reviewed them by checking the coherency of the data extracts that correspond to the themes. That refinement process resulted in developing a thematic map illustrating the meanings evident in the data as a whole, but also in discarding or changing some themes as well. That phase entailed having an idea what were the different themes and how they fitted with each other (Braun & Clarke, 2006).

Phase 5: defining and naming themes

The thematic map of my possible themes enabled me to gain a picture of what the story that the themes might tell about the data as a whole. As a consequence, I was more confident in defining and explaining explicitly what each theme is about. Refining the names of the themes so that the label depicts their essence was also important at that stage (Braun & Clarke, 2006). By trying to rename the themes with more abstract labels, the analysis also progressed at a more conceptual level rather than being a simple description.

Phase 6: producing the report

By organising and sorting out the data I identified the most representative and meaningful data that I could then use to build my analytic arguments.

> The writing up includes data extracts, provides a concise, coherent, logical, non-repetitive and interesting account of the story the data tell within and across themes (Braun & Clarke, 2006, p. 93).

In the data analysis chapters data extracts are embedded in a narrative that goes beyond description, and focuses my arguments on my research questions. The themes, apart from being imbedded in the narrative, are also used as a means of structuring the data analysis chapters. Overall, I wanted to reconstruct stories from the data, as fieldwork stories that would represent patterns I identified through my experience, and that my participants pointed out to me, through reading the literature, and through reading and comparing-contrasting the data. My analysis is based on those four intertwined activities. A main element of the data analysis chapters entails describing situations and events in as much detail, and combining different participants' views on them as examples to support my arguments.

Writing up and composing a story coming from the data does not mean that only one story, my story, is plausible. Analysis involves interpretations and I have put together my impressions of the data while other researchers by focusing on different aspects of data may interpret events differently and arrive at different conclusions. In addition, producing a qualitative data analysis report means keeping a balance between conceptualisation and description (Corbin & Strauss, 2008). I will begin my data analysis chapters by describing the case studies. Hammersley & Atkinson (2007, p.160) argue 'there is no sense of pure

descriptions: they are constructions involving selection and interpretation'. Also, I aspire to generate new knowledge and deeper understandings by developing a theoretical framework in relation to collaboration between schools and outdoor education settings and use it as a framework to look at the learning process. I adopt Hage's (1972, p.34) definition of a theory as 'a set of well-developed categories (themes, concepts) that are systematically interrelated through statements of relationship to form a theoretical framework that explains some phenomenon'. Thus, my attempt to theorise is not limited to condensing raw data into concepts, but also involves arranging the concepts into a logical systematic explanatory scheme (Corbin & Strauss, 2008).

It is important to note that writing has an overarching role in the data analysis process. Writing began with jotting down ideas, or more extensive fieldnotes, and progressed into making memos, coding and producing the final report. Writing in that sense is a continuous way of analyzing that stimulated my thinking, challenged my reasoning, and directed me to establish logic in my arguments. As Richardson (2000, p.923) suggested:

> Writing is a method of inquiry, a way of finding out about yourself and your topic. Although we usually think about writing as a mode of 'telling' about the social world writing is not just a mopping-up activity at the end of a research project. Writing is also a way of 'knowing' a method of discovery and analysis. By writing in different ways we discover new aspects of our topic and our relationship to it.

In the following table (4-5), I present part of my thematic analysis to illustrate how I applied the analytical method. In particular I illustrate how my analysis resulted in the argument that the success of school-garden collaborations is based on the development of personal relationships developed between teachers and educators. The first column of the table consists of the themes I came up with when I was looking at the data themselves using the constant comparison method.

The second column consists of themes coming from the literature such as models of interorganisational collaboration and the factors that influence the success of interorganisational collaboration. The third column consists of the final result of the analysis during which I combined the themes from looking at the data and the themes from looking at the literature. Individual collaboration is the title of Chapter 7 of the thesis where I explain in detail how levels of individual involvement may vary during interorganisational collaborations and as teachers and educators develop a relationship the collaboration is more likely to succeed. The model I developed to explain the phenomena, i.e. *Individual Collaboration Continuum* was also inspired by the literature, i.e.

Partnership Structure Continuum (see figure 3-3). Summarising how I applied thematic analysis in my research, the initial coding as the result of constant comparisons (inductive approach), is combined with themes from the literature (deductive approach), to produce the final themes and the structure of the data analysis chapters.

Table 4-5 An illustration of thematic analysis

Themes from comparing the data	**Themes from the literature**	**Final themes**
1. Collaboration based on individuals 1.1. Communication, common planning 1.2. Roles and responsibilities based on the organisation of the visits 1.3. Appreciation of each other 1.4. Trust 1.5. Enthusiasm 1.6. Enjoyment from working with each other 1.7. Sharing common characteristics 1.8. Understanding 1.9. Complementing each other 1.10. Challenge and creativity 1.11. Giving feedback 1.12. Diffusion of the individual collaboration to improved activities 1.13. Visit integrated to school work 1.14. A routine of collaboration 1.15. Satisfaction	1. Factors influencing the success of interorganisational collaboration 1.1. Membership ▪ Mutual respect, understanding, trust ▪ Appropriate cross section of members ▪ Members see collaboration as in their self interest ▪ Ability to compromise ▪ Commitment ▪ Establish relationship between people 2. Models on interorganisational collaboration Partnership structure continuum	1. Individual collaboration (comprises also the title of Data analysis Chapter 6). *Individual Collaboration Continuum* (model of increasing level of involvement and building a relationship between teachers and educators)

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Chapter 4 began by explaining that I applied an ethnographic multiple case study methodology in my research and the cases I selected include the collaborations of Wakehurst with three local primary schools. I also explained how by living in the gardens and realising the potential from being more open and flexible in my fieldwork methods, I would be able to gain a better understanding of the case studies, which was the reason I developed the ethnographic case study methodology after entering the field. I also explained the problems with getting access to my settings and the value of building relationships with my participants. I described my main research methods i.e. participant observation and interview (semi-structured and unstructured) and also how I adopted ethical guidelines and applied quality criteria such as confirmability, credibility, transferability. I explained that I adopted a combination of inductive and deductive approaches in my research and I also made transparent my data analysis processes. Having described my methodology, I will move now to the data analysis chapters, starting with describing the three case studies (Chapter 5), and continuing with three main factors which I regard as important for the school-garden collaborations which are *history of collaboration* (Chapter 6), *individual collaboration* (Chapter 7), and *interdependency* (Chapter 8). These factors which contribute to the success of the collaboration provide also a framework to look at pupils' learning and the relationship of in-school and in-the gardens experiences. Additionally, how environmental education is applied in the gardens and influenced by the collaboration, and with what results, will be discussed (Chapter 8).

Chapter 5. Case studies description

⌘ Chapter Introduction

Chapter 5 is the preamble of the three data analysis chapters and aims to create a picture for the reader to understand what the cases of the study consist of. The story of the garden collaboration with each of the three schools is unravelled i.e. the story of each case study beginning with the past, history of the collaboration which is also the main theme of the first data analysis chapter. Being initially interested in how botanic gardens collaborate with the local schools in the present, and the learning opportunities accruing from that collaboration, I realised that both phenomena depend strongly on how the organisations interacted in previous years, hence the history of collaboration is an important issue to explore. I assembled the stories of collaboration between each school and the gardens, by pulling threads from different participants who had experienced the collaboration in different ways throughout the years. The ethnographic methods I employed during my research, and especially my observations of the daily life in the gardens gave me the opportunity to meet people who may have had collaboration with the schools in the past and provided me with relevant information. I should note that one of the limitations of the fieldwork is that I did not investigate in-depth the history of the collaboration, but rather gathered data from people that had been involved in the collaboration in the past. The second part of each case study describes the collaboration activities I observed during my fieldwork, in the 2006-2007 school year. The findings of my research include a collaboration framework that points out three main factors that influence botanic garden – school collaborations: (i) history of collaboration, (ii) individual collaboration and (iii) organisations' interdependency. Within that framework other factors will be also identified and discussed. Moreover, the description of the case studies includes details of collaboration activities which will be further analysed in relation to how students' environmental learning experiences are shaped. I would like to stress the descriptive rather than critically analytical character of these case study stories, as they are providing the context of the analysis to follow (see Chapters 6, 7 and 8).

The reader should also note that the case studies are the three collaborations between Wakehurst and the local primary schools and for that reason the case studies descriptions start by explaining what the three different collaborations entailed, but, when a more in-depth look is needed, the focus will narrow down from the organisations general overview to a microanalysis of the individual interactions. This can be described as

'within-case analysis' which goes on to detail what is happening in the collaboration. Even when the focus is on individual interactions, the implications of these for the interorganisational collaboration will be also discussed. Narrowing down the level of analysis is essential in order to achieve analytical depth. Further, the attention to the individual collaboration is justified by the fact that individual interactions became one of the main themes emerging in an inductive way from the research. The importance of that theme was also confirmed by the literature; for example Mattessich & Monsey (1992) in their review emphasised that, between the various factors that influence interorganisational collaboration, the largest number of studies identified membership characteristics, including how the members across organisations interacted with each other. Tables 5-1, 5-2, 5-3 provide a summary of the activities that the botanic gardens – school collaborations entailed with information on the members of each organisation that was involved in each activity. The following data analysis chapters provide a more analytical and critical perspective on how the interactions developed. From these tables, it can be seen that, in order to examine the interorganisational collaboration, it is essential to look at how the individuals interacted.

Complementary to this chapter are the Appendix 2, 3 and 4 that give a more detailed overview of the collaborative activities during 2006-2007, and describe the contexts of my research i.e. the communities where my research is located (villages and town), the schools, Wakehurst gardens, and Wakehurst learning programme (the current range of activities offered in the garden, and how the programme developed).

5.1. Cherry Tree Primary collaboration with Wakehurst

History of collaboration[14]

Evidence of how the Cherry Tree Primary primary and Wakehurst relationship began, came from Marie, a part time teacher who was being trained to become a Wakehurst educator. Marie had been living in the village area for over 30 years, and when she became a teacher at Cherry Tree Primary 17 years ago, she started taking the pupils to the gardens. At the beginning of the 1990s, the Wakehurst learning programme was just starting to develop, and because they needed children to participate in their initial projects, they approached the local school. The gardens' only educator, Jean T., went to the school to plan the visits, and liaised with Marie to develop the learning programme. When Marie moved to another local school she then created a liaison between her new school and Wakehurst. One issue that arises regards the movement of teachers between schools, and in particular what happens when a teacher, who is enthusiastic about the school collaboration with Wakehurst, moves on. Moreover, the collaboration between Marie and Jean T. was a successful collaboration that initiated a long term relationship between the gardens and the schools that developed over time.

Collaboration between Cherry Tree Primary and Wakehurst became more regular, especially in the form of school visits, from 2002 onwards when coincidentally the learning programme became more structured and better organised in terms of facilities, teachers' expertise, and the content of the programme. This stronger collaboration should not be attributed only to Jean T.'s initiative, but also to the enthusiasm of the Cherry Tree Primary head teacher. This commitment from two key people, the head of the learning programme and the head teacher of the school was an important factor in establishing a history of collaboration and contributing to the continuity. The role of the head teacher in the success of any collaboration should be carefully examined as, across different schools, the head teachers' involvement in the collaboration varied. An indicator of the

[14] It must be clarified that the phrase 'history of collaboration' in this chapter refers to a record or account of past events and developments (Longman dictionary of contemporary English, http://www.ldoceonline.com) which is actually an account of how the collaboration developed in the past. Moreover, history of collaboration will be examined in more detail in Chapter 6, as it comprises one of the main factors influencing the collaboration. One of my main arguments is that the history of each collaboration between Wakehurst and the local schools established specific patterns which determine the present and future of the collaborations. In respect to those issues, Mattessich & Monsey (1992) explain that when a history of collaboration exists in the community, that history offers the potential partners an understanding of the roles, expectations and needs of each other, and enables them to trust the process.

strong collaboration was the direct communication between the head teacher and the head of Wakehurst learning programme. Each class from Cherry Tree Primary usually visited the garden once or twice a year, walking there via the public footpath, apart from the foundation stage as the pupils were too young for the walk. The visits were linked with the National curriculum. In 2004 Cherry Tree Primary teachers attended an INSET (In Service Training) day at Wakehurst, which provided them with a better understanding of what the learning programme could offer. In relation to the topics of the school visits and whether they are replicated every year for the next year group, the head teacher explained to me: '…we plan on a two year cycle because we have two year groups mixed; the subject matter will change sometimes' (Interview with Janet M., 12/7/2006).

Apart from the school visits, the Cherry Tree Primary collaboration with Wakehurst includes ongoing projects such as the Wild View. This started in 2003 as part of a big event organised by Kew, and initially involved a project at Wakehurst where visitors could observe through monitors in the field studies centre, the nesting activity in nest boxes placed in the gardens, which were equipped with cameras. The project at Wakehurst was organised by the head of the arboretum unit in collaboration with the head of the learning programme. In 2004 the monitors were place in the newly built visitor centre so that more people would be able to see the nesting, and also included an interpretation display beside the monitors. In 2005 as a trial of how schools could be involved in the project, a nest box with a camera was placed in Cherry Tree Primary and the following year the project moved to Wivesfield, another local school. The head teacher of Cherry Tree Primary described how the project went the first time in 2005.

> **Janet:** there is a bird box there on a tree and they put what they call a web cam for us. We had live projection, so we watched the birds making their nest, laying the eggs, hatching, the chicks being fed and everything…the projector was here and wire coming through. I will show you where the bird box is. That was an amazing experience. It was incredible (Interview with Janet M., 12/7/2006).

Wakehurst has been receiving benefits from the collaboration with Cherry Tree Primary such as the development of new activities that could be then used for other visits. The teachers are familiar with what Wakehurst can offer to them, and they get involved in developing activities tailored for them during the school visits. These activities are added to the list of the activities offered at Wakehurst and then can be replicated for other school visits. In other cases, the educators are developing new activities based on their inspirations and experience from what the schools need and then in order to test the newly developed activities they will ask a school with which they have a closer relationship,

such as Cherry Tree Primary, to come for a visit and test these activities. As a return the school gets a free visit for that occasion. In both cases, developing new activities in collaboration with the school teachers, or testing new activities developed for the schools' programme, it is evident that the close collaboration of the school with Wakehurst contributes to the expansion of the learning programme. Cherry Tree Primary has contributed to that development for many years, and the continuity of that contribution indicates a more stable ongoing collaboration of the two organisations. The head of learning programme explained the relationship with Cherry Tree Primary:

> **Jean T.:** We have several local schools, very local to us. One four miles up the road, and one primary school a walking distance from here, that we work very very closely with all the time. Because first of all we are so close, we have a duty to support those, simply because they are our neighbours. And it means that when we are developing ideas and trying things out, those are the schools that we will try out with, we will invite them in. We are trying to make it a two way process, so they will be helping us developing new ideas, they come to us…because of our relationship we know them, so we feel more adventurous with that school, and they feel they trust us; they think it will probably work with us. Cherry Tree Primary, we are seeing the children every year, and the children from the school each year come in, almost from infant all the way through. And that is because they work into their scheme of work. They've been doing the habitats, they've been doing the plant science, but they will also be asking us to try different things (Meeting with Jean T., 31/3/2006).

Two points have been highlighted by the head of the learning programme as important for the Wakehurst collaboration with Cherry Tree Primary: (i) the geographic proximity, and (ii) the willingness of the teachers to integrate the activities offered (or negotiated) by the garden into their curriculum.

Initially when investigating the possibility of collaborations between the garden and the local schools, and looking at what collaborations may entail the most obvious activities to focus on would have been the school visits or other specially adjusted projects. However, even from the initial stages of the fieldwork when I visited the research settings to accustom my self with the environment of the research, informal links between the gardens and the schools became evident. When I first visited Cherry Tree Primary in July 2006, the head teacher introduced me to Mrs Beth R., and she explained the variety of responsibilities she had undertaken:

> **Janet:** This is Mrs Beth R., the wife of the head of Wakehurst. Beth does a lot; she runs the gardening club and she is in charge of the Eco-school council, and is a teaching assistant (Interview with Janet M., 12/7/2006).

In addition, many pupils' parents work at Wakehurst. Those aspects of collaboration have been taking place prior to this research, and continued during my fieldwork. I will describe the significance of those aspects as I experienced them during the year of the study. Figure 5-1 provides an overview of the case study and table 5-1 presents the activities I observed during my fieldwork regarding the collaboration of Cherry Tree Primary and Wakehurst. A more detailed version of the table 5-1 can be found in Appendix 2.

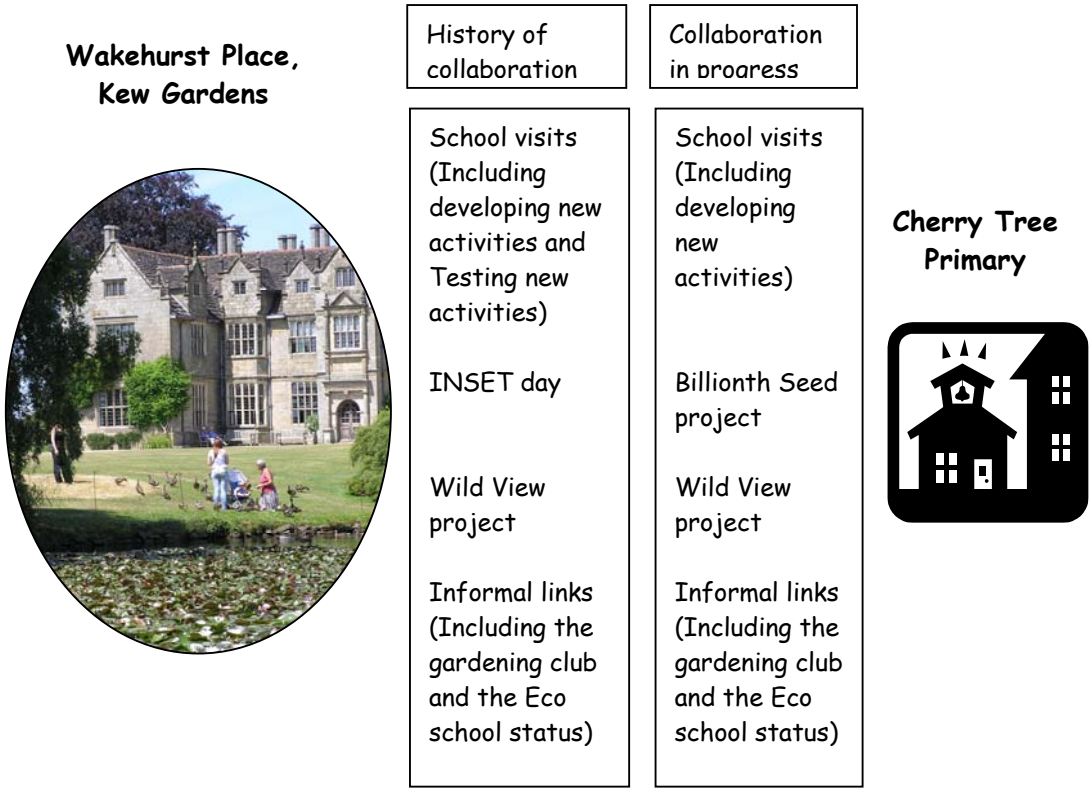

Figure 5-1 Overview of Cherry Tree Primary – Wakehurst collaboration

Table 5-1 Cherry Tree Primary – Wakehurst collaboration activities during 2006-2007

Class	Date	Theme of the visit/project	Teacher	Educator
School visits				
Class 1 Reception &Yr1 (19 pupils)	3/5/2007	Plants and flower shop, story of a sunflower, Trail	Esther	Kelly
Class 2 Yr1&2 (26 pupils)	18/9/2006	Get Creative	Esther & Karen	Kelly
	19/3/2007	Plants		Elsa
	11/6/2007	Habitats		Juliet
Class 3 Yr3 (22 pupils)	29/9/2006	Healthy Eating, William Morris	John	Heather
	21/2/2007	Rocks & Soils→Plants		Kelly
Class 4 Yr4&5 (25 pupils)	20/10/2006	WWII, Food miles, Recycling	Joyce	Heather
	26/3/2007	Shelter building		Michelle
	18/5/2007	Rainforest & tree mythologies		Michelle
Class 5 Yr5&6 (27 pupils)	3/10/2006	A place to grow, how plants adapt	Mark	Kelly
	6/3/2007	Parts of a plant, Healthy Unhealthy plants (revision)		Heather→ Margaret
KS2 Class 3, 4, 5 (64 pupils)	12/6/2007	Orienteering & sketching	John, Joyce, Mark	Non-Assisted
The Wild View project				
The whole school got involved but Class 5 was responsible for monitoring the nesting period	1/4/2006-30/6/2006	Monitoring the nesting period through observations of bird box with cameras	Mark, Beth (T.A.)	Richard & Nick
The Billionth Seed project				
The whole school	17/4/2007	Presentation of the Milenium Seedbank activity and seed conservation importance	All the teachers assisted	Zoe

The collaboration 'in progress'

During the school year 2006-2007, as the Cherry Tree Primary head teacher commented, it was the year where the most regular collaborative activities took place between the gardens and the local school especially in relation to the number of school visits (see table 5-1). Cherry Tree Primary's head teacher, who is very keen to encourage and improve the collaboration of the school with Wakehurst, was on leave during the year of the study; however she had pre booked the visits and encouraged all the classes to visit Wakehurst once a term (this was the first time). The visits were booked in July 2006 in order to secure their booking, especially for the busy spring and summer periods in the garden.

The main activity that the collaboration entails is the school visit to the gardens. The visits and the theme of the day are displayed in detail in table 5-1. Most of the assisted visits were linked with the curriculum and the topic that the pupils had been studying at school (see table Appendix 2-1). The class 2 (19/3/2007), and class 3 (21/2/2007) visits,

were not linked with the curriculum topic because the science subject topic being taught in school at the time was seen as not matching with possible activities in the garden. During my interviews, both the gardens' educators and the teachers emphasised how important it was that the visit topic was adjusted to fit the school curriculum. This point was highlighted on various occasions and it was one of the main reasons that made the school depend on the gardens, i.e. that the schools could fulfil their national curriculum requirements through collaborating with Wakehurst. The same issue emerged in the other schools and can be regarded as one of the main drives for the schools to collaborate with Wakehurst. Almost half of Cherry Tree Primary visits to Wakehurst in 2006-2007 were directly linked with the science curriculum; however, very creative examples of collaboration involved links with other subjects such as history and English. In addition, for the KS2 non assisted visit, the teachers deliberately chose not to do science related activities and do something different, related to PE (Physical Education) and arts.

The process of organising a school visit at Wakehurst requires the teachers to visit the gardens for a planning meeting with the educator responsible for the visit. During my fieldwork I found that the young teachers at Cherry Tree Primary who did not have experience of the school visits went for a planning meeting at Wakehurst in the beginning of the year, following the procedures, but for the next visits during the year they preferred not to go for a face to face meeting. The teachers who had been at Cherry Tree Primary longer, and have been on school visits to the gardens before, preferred to have a planning meeting on the phone, even at the beginning of the year. The phone meetings varied in length and involvement and interaction between the participants varied according to the teacher's enthusiasm and expectations from the visit. Hence some planning meetings were short, and did not involve much interaction between the educator and the teacher, while in other cases a planning meeting on the phone was detailed and resulted in developing highly creative, jointly-developed activities. This finding is based on my observations, and on the educators' and teachers' interviews (although in teachers' cases their attitude towards the planning meeting was not always explicitly expressed, but was rather implied). This pattern was repeated: for school visits throughout the school year 2006-2007 some teachers were not very engaged, while others were heavily involved in the planning process. A crucial factor that contributed to the teachers' engagement was which educator they collaborated with, whether they had collaborated in the past, and whether they had been able to develop a relationship with them. While the teachers' attitude towards the planning meetings may initially seem a matter of preference, during the interviews the main argument that emerged was that the teachers did not have time for face to face meetings owing to their workload in fulfilling national curriculum

requirements, and meeting Ofsted inspection standards. However, one question that arises is why some teachers found time to devote to planning the school visits in collaboration with the educators, while others did not. This will be further explored and discussed in sections 6.1 (pp. 186 – 200) and 7.4 (pp. 259-269).

Another pattern that emerged was that some teachers requested to collaborate with specific educators and also requested activities that the teacher had organised in previous years for their previous classes. I found that the Cherry Tree Primary teachers had a good knowledge of what Wakehurst Place could offer to them as they had been in the gardens many times, and also because of the INSET day at Wakehurst in 2004. Hence they were feeling confident of what to expect from the gardens. The familiarity that the teachers had developed with Wakehurst learning programme because of the history of collaboration and the training they had received in the past were factors that contributed to further successful collaboration.

It should be noted that the distance between Wakehurst and Cherry Tree Primary is only two miles, and the two settings are linked through a public footpath which the school uses to access the gardens. The walk lasts approximately 30 min and the easy access of the school to Wakehurst, which also means that the visit is inexpensive, explains partly the regularity of the visits. Both the regularity of the school visits and the fact that pupils and teachers – living locally – may also visit the gardens with their families established a feeling of familiarity. In addition, the educators knew what the Cherry Tree Primary teachers were expecting of them and knew how the school was working. That familiarity could be regarded as an extra benefit for the collaboration.

Wild View is another project that took place during the spring and summer term of 2006-2007 school year. It was the second year that Cherry Tree Primary had participated in the project which on this occasion involved six local primary schools. The project was more structured and interactive than before, and entailed the schools recording systematically the nesting period which they would observe through a projector in the school, connected with micro-cameras placed in their bird boxes. One specific class was appointed in each school as responsible for the observation recordings. Different schools and different teachers, who were involved in the project, adopted a different approach according to their priorities, their enthusiasm and value they attributed to Wild View. At Cherry Tree Primary, Yr5 pupils (part of class 5) were responsible for recording the nesting process. Mark, class 5 teacher, was not very enthusiastic about integrating the project into his teaching. He acknowledged the value of the project for the pupils but he did not see any

connection with his priorities of meeting curriculum targets. As a result there was not any coherent recording of the nesting activity on a daily basis. One of the reasons that the Wild View project was not a priority for him was that during the specific period of the year (spring time) there were other curriculum priorities for the class, and he was under pressure to prepare the students for the SATs. Mark explained during an interview that, for the following year, the school decided to give the project to another class, possibly class 3 which had already participated in the gardening club organised by the teaching assistant Beth. I do not have enough data on why Mark's class had been given the responsibility of implementing the project and the extent to which he willingly agreed to that. Issues of inappropriate allocation of the project, and whether the teacher has been asked before he was allocated the project, arise and may have contributed to why he was not so enthusiastic.

Wild View at Cherry Tree Primary was a success as blue tits created a nest in the bird box. The projector showing the nesting activity was situated in the ICT class and it was mainly Beth who took the responsibility to organise pupils to look at the nesting activity, usually during lunch time or sometimes before the ICT class. Although the recording of the nesting process was not very consistent, I was present at occasional viewings of the bird box with the pupils, and it seemed to me as if all the classes had observed the activity, and were able to describe the nesting process. Also, the pupils remembered the previous time, two years ago, when they had the camera and the bird box in their school. I found that other schools that participated in Wild View embraced the project more enthusiastically integrating it into their teaching the curriculum e.g. science and English or even producing a dvd about the nesting activity. The implications for the collaboration that emerge from how Wild View project was managed in different schools is that collaboration depends on mutual involvement and understanding of expectations from both the organisations, but also from the specific individuals within the organisations that implement the projects. Furthermore, collaborative activities should not be forced upon individuals; rather, a more open, dialogic process should be in place during which teachers and others can express their willingness to participate in the interorganisational collaboration, and be able to shape its development.

During a meeting I had organised in May 2007 with representatives of the schools of my research, the head of the learning programme pointed out that it is not only the schools that benefit from what Wakehurst can offer, but also Wakehurst Place benefits by the relationship with the local schools in many ways. An example of that influence is the participation of the local schools in Wakehurst projects that aim at publicity, raising funds

and promoting the botanic gardens' profile. One of these projects that took place during 2006-2007 was the Billionth Seed project. In April 2007 the Millennium Seed Bank banked its one billionth seed, an African bamboo, collected by a partner institution in Mali. In order to celebrate the work of the Millennium Seed Bank, but also raise publicity for the importance of the work of the seed bank, and stress the need for securing funding for the future of the project, a series of events were organised culminating with the visit of Gordon Brown to the Millennium Seed Bank. Part of these celebrations was pointing out the educational aspect of the project, and raising awareness about seed conservation in the schools.

Zoe, a Wakehurst educator, visited three local schools (including Cherry Tree Primary and Elm Tree Primary), did a presentation about the importance of seed conservation using specimens from the Millennium Seed Bank, and the pupils from each school wrote conservation messages on the back of postcards showing the pictures of seeds that are being kept in the Seed Bank. A selection of the postcards was presented to Gordon Brown, and also displayed at the Wakehurst visitor centre. Zoe explained to me that she had been appointed to carry out the project at the last minute, and she e-mailed the schools to ask them to participate in the project. Cherry Tree Primary responded positively. Zoe described the pupils who took part in the project (including Cherry Tree Primary) as enthusiastic and knowledgeable. Zoe noted that she felt comfortable when she visited Cherry Tree Primary, and being in Wakehurst educators' uniform, she felt she was regarded as a friend, and she had an immediate rapport although she had never taught those pupils before. A factor in Zoe's positive reception at Cherry Tree Primary, and the successful implementation of the project despite its last minute organising from the garden, was the positive history of collaboration that the two organisations have, and is an indication of the close relationship they have developed. This project is a clear example of how the garden is dependent on the schools to show the value of its work and secure future funding.

Apart from the 'official' collaboration activities of Wakehurst and Cherry Tree Primary during 2006-2007, various links were also playing a part in the interorganisational relationship. The most obvious informal link is the wife of the head of Wakehurst, Beth, who is also a teaching assistant in Cherry Tree Primary school and her children are pupils at the school. Beth is a horticulturalist and her role has been developed as very crucial for the environmental policy of the school, apart from her role as a teaching assistant. Beth organises the school gardening club with pupils from class 3 (Yr3) running during lunch time every Wednesday. She is also responsible for the Eco-school council activity that

aimed to achieve the Silver award during 2006-2007[15]. Beth has been consulted in class projects related to growing plants, and she has a leading role in the development of, and looking after, the school grounds. Characteristically, with the help of her husband, they developed the school's vegetable plot in spring 2007. Beth has often accompanied the pupils on the school visits to the gardens. Beth's role in the Cherry Tree Primary collaboration with Wakehurst was important; when teachers were too busy with their teaching responsibilities Beth would step in and help out with implementing the collaborative projects in the school, as happened with the Wild View project. Also, during school visits to Wakehurst, she would have a more active role than most teachers, using her horticultural expertise, and her knowledge of the gardens to help the pupils do the activities delivered by the educator. In a way she facilitated the collaboration, making a difference to the pupils' experiences as well.

The deputy head of Cherry Tree Primary also expressed how she feels about the school having a variety of links with Wakehurst.

> **Erica P.:** …I suppose it's partly because we are coming more, but I sort of feel there is much more of a link forging between; you know there should be; you (Wakehurst Place) are only just on our doorstep and plus the head of Wakehurst wife works for us as well. So we have a very special relationship…so I feel there is another link' (Meeting with head teachers, 14/5/2007).

Other informal links between Wakehurst and Cherry Tree Primary include the fact that some staff from Wakehurst are parents of school pupils. One mother who came for the Eco-school council meeting was working as a scientist in the Millennium Seed Bank. One of the arboretum unit's staff who came to Cherry Tree Primary for the Wild View project also has his son in the school. Wakehurst staff whose children go to Cherry Tree Primary may initiate or encourage the involvement of the school in Wakehurst projects. Those informal links also suggest that pupils from Cherry Tree Primary whose parents work at Wakehurst have good knowledge of the gardens and its significance and possibly high levels of knowledge about plants and environmental issues. The factors that stand out here as contributing to successful collaborations are the informal links that are established between participants and the mutual familiarity and understanding that develops. These informal links are important as they can act as facilitators for the collaboration, driving new collaborative activities instigated by the gardens and/or helping out within the school to implement the collaborative projects. The people who establish these informal links have the unique position of being connected with both organisations, and being able to

[15] The school achieved the Silver award as an Eco-school in 2007.

understand not only how both organisations work, but also the constraints they face when collaborating. They can, therefore, contribute to overcoming these constraints and thereby strengthening the links.

5.2. Elm Tree Primary collaboration with Wakehurst

History of collaboration

I was not able to trace the beginnings of the collaboration between Elm Tree Primary and how it gradually developed throughout the years; however, I found that in respect of school visits, the school had established a specific system: one year group visited the gardens every year, usually Yr4 (two classes), which was a pattern I found occurring in other schools including Oak Tree Primary (the third school of my research). Each year group of Elm Tree Primary has a different annual trip to other outdoor settings.

I could trace only one previous visit of the school to Wakehurst during the school year 2005-2006 (see document Appendix 2-1) which was related to the science curriculum. Information on previous years was based on Wakehurst records which only started to be kept in an organised manner in 2005 and for that reason tracing previous years' school activities at Wakehurst was difficult. Some information was provided by Elm Tree Primary staff but it lacked consistency, with questions also about its accuracy.

I did not find any particular enthusiasm from the Elm Tree Primary head teacher (who has been at the school since 2003) for encouraging the school – Wakehurst collaboration. However, I must acknowledge his positive attitude to my research, and also the fact that he gave me access to the school activities. Ariel, Yr4 class teacher, was informally appointed as responsible for the school's collaboration with Wakehurst and she was also responsible for the Eco-school council activity.

Elm Tree Primary is a fairly new school, completed in 2000. Wakehurst donated trees for the development of the school grounds and provided staff to help with the planting. Also, during 2005-2006, Wakehurst provided cameras connected with a tv screen in the school to observe the activity of a badger set that was established in the school's grounds. I did not find more information about the progress or success of the project as the staff from Elm Tree Primary were able only to tell me about its existence, and point out the areas of

the school where the equipment was installed. They were not able to give me more details, such as, who was responsible from the school for the implementation of the project and what it had achieved.

Informal links between Wakehurst and Elm Tree Primary were also evident. One involved Ruth, a Wakehurst educator, and her husband who is a scientist working for the Millennium Seed Bank, and whose children are pupils at Elm Tree Primary. Ruth's husband has been very active in encouraging the environmental aspect of the school. He was characteristically called 'Mr Compost' by the pupils. Since 2003, Ruth had been running the weekly nature club. She stopped organising the nature club when she lost the help of one parent assistant who was pregnant, but she continued to contribute to the school by participating in the Eco-school committee activity. Ruth and her husband were highly motivated and involved in different ways with the school in order to encourage its environmental policy and environmental education; however they felt frustrated as their efforts were not catalysing the enthusiasm of the school's staff to continue their work, and hence after some time they withdrew most of their efforts. The critical question that arises here is why they were not able to harness the enthusiasm of the other staff members. That issue is crucial for environmental education as it points out the limitations of enthusiastic individuals who promote environmental activities in schools when there is limited or no support from other members of staff. Such individuals may be pupils' parents or members of the local community, but if their work in school is to have continuity and impact they need the involvement of permanent staff of the school and the school leadership. Also, whether the school will take on board and continue the work of the enthusiastic individuals such as Ruth and her husband can be affected by factors such as the school's overall priorities, its ethos, the support of the head teacher and governors, and by how the individuals concerned attempt to work. Do they, for example, have an open, inclusive way of bringing change in the school, or a more unilateral approach? All of these factors have an impact on the collaboration of the school and the garden.

Figure 5-2 provides an overview of the case study, and table 5-2 presents the activities I observed during my fieldwork regarding the collaboration of Elm Tree Primary and Wakehurst (a more detailed version of the table 5-2 can be found in Appendix 2.

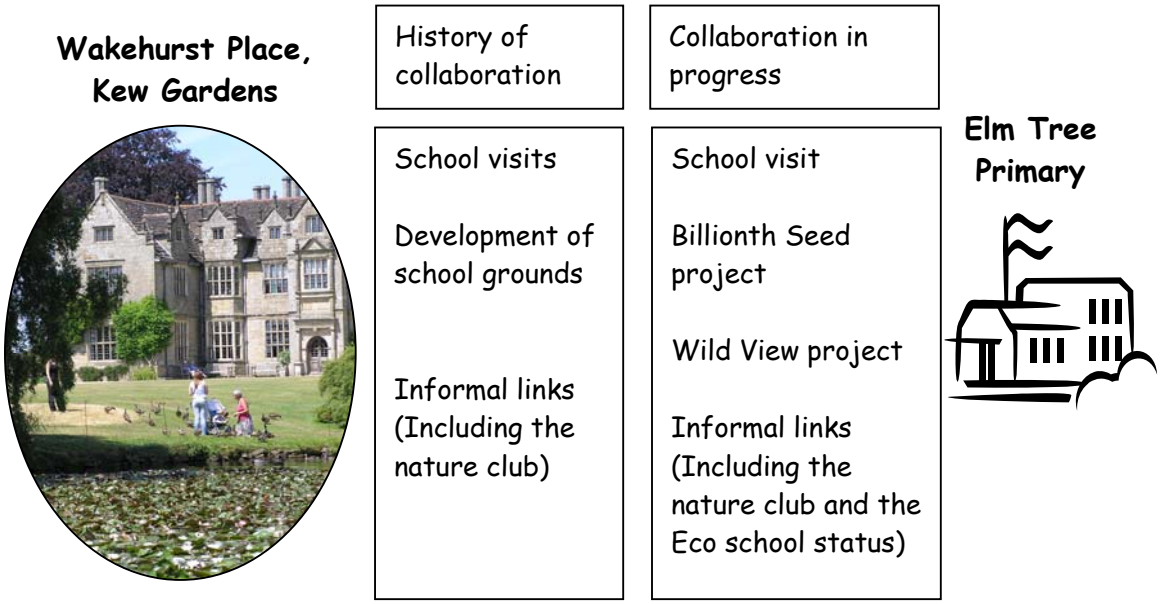

Figure 5-2 Overview of Elm Tree Primary – Wakehurst collaboration

Table 5-2 Elm Tree Primary – Wakehurst collaboration activities during 2006-2007

Class	Date	Theme of the visit/project	Teacher	Educator
School visits				
Class 4 Yr4 (two classes – 64 pupils)	20/6/2007	Rainforest	Ariel & Cecilia	Juliet & Valerie
The Wild View project				
The whole school gets involved but Class	1/4/2006-30/6/2006	Monitoring the nesting period through observations of bird box with cameras	Ariel, Yr3 two teachers	Richard & Nick
The Billionth Seed project				
Class4, Yr4 (two classes – 64 pupils)	18/4/2007	Presentation of the Milenium Seedbank activity and seed conservation importance	Ariel	Zoe

The collaboration 'in progress'

As far as the collaboration of the school with the gardens is concerned, during the year of the study (2006-2007) the school had more activities linking them with Wakehurst than ever before (see table 5-2).

During 2006-2007, it was two Yr4 classes that went to Wakehurst as they had the previous year (see table Appendix 2-2 for more details on the activities during the visit). Ariel, one of the Yr4 teachers, booked the visit in the beginning of December for 20th of

June. The educator, Juliet, who was leading the visit was also teaching science to the same year group in school (an informal link). Initially I thought that this kind of arrangement arose 'naturally', but actually it was Juliet who heard about the visit and proposed herself, as a Wakehurst educator, as the leader. In the end, the arrangements in relation to the topic of the visit were quite confusing, and no formal planning meeting for the visit ever took place. Juliet told me that, in effect, she had the planning meeting with herself! Juliet's comment illustrates some of the communication difficulties, and points to potential problems when the educator is also a teacher at the school which visits the gardens. In Juliet's case, the overlap of the roles did not result in the collaboration processes being followed to the letter –especially the planning process. It looks as if the problems were caused by the casual nature of this planning process. The school teachers advised Juliet informally to focus the visit on Habitats which has been their science topic; however, later on, she changed her mind, and suggested that it would be better to do activities at Wakehurst that could not be done at school (the school has a variety of habitats in the school grounds) and changed the topic into one on Rainforests which was the cross curriculum topic that the classes were studying at the time (linked especially with geography and English). I discovered through my interviews that although the educator and the teachers were working together in the same class, which meant that they had close interaction, communication issues emerged regarding planning the visit to Wakehurst. As a result the teachers had unfulfilled expectations from the visit, as they anticipated visiting the Millennium Seed Bank for activities. One of the teachers explained to me:

> **Ariel:** …I had obviously interpreted the discussion (informal communication) slightly differently, because I thought we were going to see seeds, I thought they were going to bring seeds from the seed bank and show us…this is what one of the plants look like and these are the seeds. I thought we were going to be going to the seed bank…There's nothing I didn't enjoy; as I said I wouldn't do the activity 'what plants can be used for?' again. I wouldn't do that activity again because we do it in the class. I would definitely make sure we are going to the seed bank because I think it is important for them to keep seeing that and learning what it is for (Interview with Ariel, 20/6/2007).

The above incident raises issues of what are the factors that can influence the success of a school visit to Wakehurst. Although I expected that because Juliet, the leading educator for the Elm Tree Primary visit to Wakehurst was also a teacher at the school, the organisation of the visit would be easier and more straightforward, and she would be able to make better links between the activities in the gardens and the activities at school, that

did not happen. Juliet lacked organisational skills which are very essential for the schools visits to Wakehurst, and there were possibly general communication issues between Juliet and her teacher-colleagues at Elm Tree Primary which also contributed to failures / missed expectations during the school visit to Wakehurst. Thus good communication and organisation are important for a successful collaboration.

In terms of the regularity of the visits, Elm Tree Primary's distance from Wakehurst is 4.7 miles, and the school has to hire a coach to visit Wakehurst, which means more organisation and the cost of the visit rises significantly. Elm Tree Primary teachers noted that although the school was not far from the gardens the cost of the visit, due to the need for transport was major and only one year group was scheduled to visit the gardens. Although that explanation about the limited visits to Wakehurst seems reasonable, nevertheless, I realised that opportunities emerged for the school to visit the gardens more often owing to informal links, but the initiatives did not flourish probably because of communication issues, but also because of the school's other priorities. For example, Louise, the administration officer at Wakehurst, whose son is a pupil at Elm Tree Primary, had proposed a visit on shelter building with Wakehurst providing the transport, but her suggestions were never taken up. This is more evidence for the importance of effective communication in collaboration and an understanding that schools have many priorities.

The relatively short distance of the school from the gardens, however, contributes to the good relationship of the pupils with Wakehurst Place. I found that many pupils visited the gardens with their families and were familiar with the place because they live locally. The advantages that the physical proximity of the schools to Wakehurst brings to the collaboration indicate that schools can benefit from establishing collaboration with local outdoor education settings. That evidence, however, does not imply that a successful collaboration cannot exist if the schools are not as physically close to outdoor education settings – or vice versa. Proximity helps, but it is only one factor.

Apart from the school visits to Wakehurst, during 2006-2007, Elm Tree Primary also participated in the Wild View project, the first year that the school was involved. I asked Richard, head of the arboretum unit and responsible for the project, how they chose which schools to include. He responded that one of the schools, Wivesfield, was chosen on the basis of the fact that his son would be a pupil; Elm Tree Primary was chosen because Louise's son is a pupil there (Louise is one of the administration officers); Turner's Hills was chosen because it was one of the arboretum unit staff's previous

schools when he was young. The way the schools were chosen is indicative of the importance of the informal and historic links existing between the schools and Wakehurst. From the beginning of the project, Richard spotted some communication issues with Elm Tree Primary in terms of gaining access and finding a teacher, or the head teacher, who would become responsible and encourage pupils' participation in the Wild View. Richard attributed the lack of communication to the fact that Elm Tree Primary is big and extremely busy, while smaller schools seem to be more flexible. The size of the school emerges here as an important point for the collaboration. What is implied here is that it is easier to collaborate with small units rather than with large ones. Hence the question that arises is how a good collaboration be established with a large school? One factor, perhaps a key one, is how to locate the enthusiastic individual within the large school who will be willing to implement the collaborative projects.

Eventually, the arboretum unit arranged two Yr3 classes to become involved in recording the nesting activity, and staff went into the school to set up the nest box and the camera observation system and give a short introduction to the classes. The pupils and one of the teachers seemed enthusiastic about the project. The monitor that was set up was a big tv screen placed in the rotunda of the school so that not only Yr3 pupils but the whole school would observe the nesting activity. Ariel, although she was not initially involved in the project, took the initiative to put information posters next to the screen. During my visits to Elm Tree Primary I did not find any regular, coherent system for observing the bird box and keeping records. One of the Yr3 teachers who was enthusiastic about the project invited me to talk to the class about it and what had been happening in the other participating schools. Although I had evidence of Elm Tree Primary teachers' interest in the project, the way they implemented it seemed uncoordinated. Once again, other pressures that teachers have as part of their teaching responsibilities should be acknowledged, a factor that may not allow them the time needed to participate in collaborative activities. On the other hand, I did find that in other schools that participated in Wild View the teachers had successfully incorporated the project in their curriculum teaching. In two (out of six schools) the head teachers were also very enthusiastic about the project which emphasises the role of the school leader in the success of any collaborative project. Unfortunately, the Wild View project in terms of the nesting was not successful in Elm Tree Primary school. No bird came to create its nest in the bird box and hence the project ended with no results. The lack of success for Wild View at Elm Tree Primary shows that the success of collaborative projects can depend on factors that are beyond human control such as normal ecological processes. Although the experience of such projects can still be valuable for students' learning, for example, realising that

people cannot always predict or control natural processes, a question that arises is whether the lack of success would mean that the school would be less inclined to participate again in the project.

Elm Tree Primary was also asked to participate in the Billionth Seed project (details about the project are included in Cherry Tree Primary collaboration description). Zoe, a Wakehurst educator, went into the school to speak about the work of the Millennium Seed Bank and the importance of seed conservation using artefacts and questioning the pupils about what would happen if seeds were going to become extinct or which seeds they would prefer to save from extinction (postcard activity). Although the project was organised at the last minute, two of the three schools responded immediately. Zoe identified communication issues with Elm Tree Primary and difficulties at getting access. She explained that when she went for the presentation in the school, she did not feel as welcome as in the other schools and she managed to speak only to the two Yr4 classes, not the whole school. Ariel, who stepped in to organise the presentation at the school, argued that they had had very short notice from Wakehurst, but appreciated the learning opportunity occurring for the pupils. The issues that arose in relation to the implementation of the Billionth Seed project in Elm Tree Primary should be primarily attributed to the last minute organisation of the project by the gardens. The project was developed to complement the Seed Bank publicity efforts that were aimed at securing future funding, so the collaboration of the learning programme with the schools contributed to Wakehurst's own organisational needs. The fact that, despite poor organisation, the project was implemented with greater success in the other schools brings forward issues that may have to do with the size of the school as well, as is explored, below.

By comparing how the Elm Tree Primary visit to Wakehurst, and how the Wild View and the Billionth Seed projects were implemented at Elm Tree Primary, some common issues arise, such as communication and organisation. Richard, head of the Wakehurst arboretum unit and responsible for Wild View, attributed the shortfalls to the fact that Elm Tree Primary is a big school (421 pupils enrolled in 2006-2007) which possibly makes it more difficult to organise things effectively. A lack of organisation on the part of educators has been also mentioned above.

In addition, there was no teacher or teaching assistant at the school who was committed to the school's collaboration with Wakehurst. Ariel, an Elm Tree Primary teacher, seemed to

appreciate what Wakehurst was offering to the school, but her practice did not reflect this. In respect to that, it was useful that at Cherry Tree Primary the wife of the head of Wakehurst was a teaching assistant in the school. Although at Elm Tree Primary there were pupils' parents who worked at Wakehurst, and contributed at the school, they did not have an everyday presence. Other factors that may have had an impact on the collaboration process were different curriculum priorities at Elm Tree Primary, for example the head teacher was very keen on promoting PE and pupils' sports achievement, and also that the school was not in a walking distance from Wakehurst, as in Cherry Tree Primary case, which meant that access was more difficult.

Wakehurst staff came to Elm Tree Primary for both projects during 2006-2007, the Billionth Seed and Wild View. Ariel, the school teacher, considering that the cost of a school visit to Wakehurst is quite high for Elm Tree Primary, appreciated the opportunity of having Wakehurst staff come to the school. She explained:

> **Ariel:** I think the relationship with Wakehurst has improved. I would like it to continue to develop. I was thinking about, it would be really nice if some people from Wakehurst came here, and did pond dipping, because we've got a pond, rather that put 64 children on a coach and take them all the way over to Wakehurst. One person or two people could come over here and use our pond and our resources, so I think that's something I would definitely like to see. I think I've said to you before, the most difficult thing is the cost. I would love to be taking children to Wakehurst once every term, we could build it into the curriculum, but it' just too expensive, you can' expect parents to pay £8.50 a term to go over to Wakehurst Place (Interview with Ariel, 20/6/2007).

Another ongoing important feature of the collaboration between Elm Tree Primary and Wakehurst Place has been the informal links between the organisations based on the fact that people working at Wakehurst have their children studying at Elm Tree Primary. The Elm Tree Primary teacher explained the implication of those links.

> **Ariel:** I think it is useful having parents at school who also work at Wakehurst because I think when there are opportunities for Wakehurst to come and work in a school parent working there may hear about that and may suggest Elm Tree Primary; so perhaps we have things here that we wouldn't have otherwise (Interview with Ariel, 20/6/2007)

A representative example of those links is the case of Louise who works as a member of administrative staff organising the school visits for the Wakehurst learning programme, and has two children at Elm Tree Primary. Louise, in various cases during my fieldwork

(as mentioned above) tried to create learning opportunities for Elm Tree Primary. Her efforts, however, did not always work out as the school has other priorities. Another example of the informal links between Elm Tree Primary and Wakehurst is Ruth's case. Although, as I described earlier, Ruth withdrew from organising the nature club, because it was a big commitment for her, she still kept contributing to the school during 2006-2007 by supporting the Eco-school activity. The responsible teacher of the Eco-school was Ariel who was organising the Eco-school council meetings every week on Fridays during the lunch break. From my observations, although Ariel always emphasised her own efforts and inputs to the committee meetings, it was Ruth who actually planned interesting activities for the pupils and kept them motivated. At the end of the 2006-2007 school year, another teacher became coordinator. During my observation I could understand the frustration of Ruth and Juliet who were hoping that a teacher with a more constant and powerful position at the school would appreciate their efforts and would enthusiastically take forward the environmental friendly school policy, but that did not happen. The role of the head teacher here should be noted, as he was not as enthusiastic as Cherry Tree Primary's head was for the collaboration, or for the school's environmental policy. From my observations in the school and discussion with Elm Tree Primary staff the head teacher had a stronger interest in encouraging sports activities in the school. Managing a big school such as Elm Tree Primary also means that the head teacher had more responsibilities than Cherry Tree Primary's head teacher and hence not as much time and resources to distribute to a variety of school activities. Additionally, the way that the responsibles for environmental activities are appointed in the schools is another issue to consider. Ariel, being a relatively new teacher at Elm Tree Primary, and at the beginning of her career, did not volunteer. Nevertheless she was given responsibility for Eco school activity. She was also made responsible for one of the school's sports clubs, and often commented on her heavy workload at the school, including both curricular and extra curricular activities. The issue that arises here is that when school staff are allocated responsibilities such as the Eco school activity, then their willingness to be responsible for and personal interest in these activities should be considered, if the initiative is to be a success.

5.3. Oak Tree Primary collaboration with Wakehurst

History of collaboration

Oak Tree Primary's collaboration with Wakehurst can be traced back to 2000 as there are records of two classes visiting the garden for activities related to their school topic. In 2002, the school had an INSET day at Wakehurst where all the teachers attended a training session. One of the teachers argued that the INSET day did not have as great an impact as it could have, by motivating the teachers who were trained to visit more regularly Wakehurst with their class.

> **Researcher:** I was thinking if that INSET day influenced the collaboration of Wakehurst with the school.
>
> **Amy:** it might have done, but I don't think it's taken off as it should have done. People talk about going there but don't actually go there. So it needs us to push it a bit more.
>
> **Researcher:** why do you think this happened?
>
> **Amy:** I don't know. Pressures of everything. You know that there are other places, other things (Interview with Amy, 27/6/2007).

However, the INSET day contributed to the collaboration in an unexpected way. Michelle was teaching science at Oak Tree Primary during 2001-2002, and as she participated in that INSET day at Wakehurst she developed an interest in becoming an educator there. As a result she eventually became one of the key educators at Wakehurst Place taking forward also the collaboration of Oak Tree Primary with the garden. Another important factor for developing the collaboration was the friendship that Michelle had with Anna, Oak Tree Primary's music teacher. Friendships and other kind of personal relationships between educators and school teachers is a very important factor that contributes to successful botanic garden – school collaborations. This will be further explored in Chapter 7.

As far as the regularity of the school visits is concerned, Yr1 and Yr2 have been visiting the gardens occasionally since 2000 (for example during 2005-2006 both classes visited together for activities related to science) but a pattern of collaboration emerged with Yr6 visits, especially since 2003-2004. The Yr4 class teacher described her view of the collaboration:

> **Researcher:** Do you have the feeling that this school has a kind of collaboration with Wakehurst?

> **Claire:** yes it seems to. I mean certainly our Yr 6 have been there lots of times. Ehm and I've taken children there in the past, to the seed bank, where we've been investigating seeds and things like that. It's just a really wonderful resource cause it's so close with the school really, and the education programme is superb, and there's always somebody who will move things in the direction that you want them to go and things like that. I think there is a good relationship (Interview with Oak Tree Primary teacher Claire, 13/6/2007)

Moreover, the school has contributed to the development of the learning programme by participating in trials for new activities, and has been involved in promoting the work of the learning programme by participating in events organised in the gardens, especially by participating in demonstration activities for 'special' visitors. As a result, the visits of classes to the garden have been free. Amy, an Oak Tree Primary teacher, commented that this kind of relationship is a 'reciprocal thing', and it works to everybody's benefit' (Interview with Amy, 27/6/2007). That kind of relationship, however, may have established a 'comfort' pattern for Oak Tree Primary over the last few years, for example, waiting for Wakehurst Place to invite them into the gardens, rather than requesting a visit themselves to support work in class. That can be an issue because it indicates a more passive attitude to the collaboration where the teacher does not contribute very much to the planning of the visit, and also, as these 'demonstration visits' are not being organised for the benefit of pupils but more for the benefit of the gardens, the primary concern is not to link the activities with what the pupils learn at school at the time of the visit.

The head teacher explained how the school trips are usually linked to the curriculum, but that occasionally there may be one-off visits:

> **George:** most of our school trips are linked with what goes on in the classroom. …teachers normally decide on where they are going to take the children; sometimes the children have been to Wakehurst Place as an one-off, cause Wakehurst Place has been doing something, some sort of theme. Particularly when they first did the story stick activity, that was a one off occasion. They sent out circulars to schools and we took them up on their offer. That's how it started. Ehm but generally the teachers have a look at what is available usually fairly locally, that would support what children are doing in class …sometimes we use an off site visit as a platform for what's happening, sometimes it takes place while that topic is being studied and other times it could be something to finish so, it varies depending on the purpose (Interview with George A., 13/7/2006).

As far as the role of the head teacher in the collaboration is concerned, he seems to be positive about the benefits of the collaboration and participation in projects with Wakehurst, but he does not have an active role in promoting the collaboration, particularly compared with Cherry Tree Primary's very enthusiastic head teacher. I would say that the most important factor for establishing this collaboration is the relationship of the educator Michelle with the music teacher Anna (personal friendship). In addition, I did not find any evidence from the past that any pupils' parents worked at Wakehurst, and so encouraged the relationship of the school with the gardens.

Figure 5-3 provides an overview of the case study and table 5-3 presents the activities I observed during my fieldwork regarding the collaboration of Oak Tree Primary and Wakehurst. A more detailed version of table 5-3 can be found in Appendix 2.

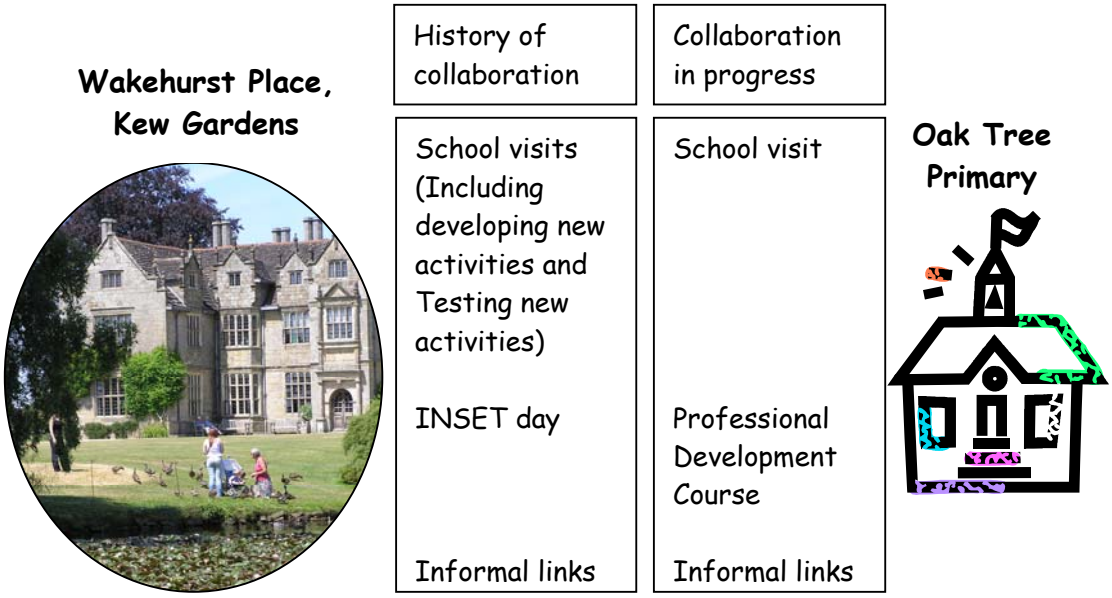

Figure 5-3 Overview of Oak Tree Primary – Wakehurst collaboration

Table 5-3 Oak Tree Primary – Wakehurst collaboration activities during 2006-2007

Class	Date	Theme of the visit	Teacher	Educator
School visits				
Class 6 Yr6 (31 pupils)	21/6/2007	Habitats, Food chains	Amy & Anna	Michelle
Professional Development course				
Yr4 class teacher & T.A.	5/6/2007	Plant it, grow it, cook it, eat it	Claire & T.A. (no name)	Jo, Ann, Carol, Andrew (gardeners) Elsa, Michelle

The collaboration 'in progress'

During the school year 2006-2007, I found no strong evidence that the Oak Tree Primary collaboration with Wakehurst had become stronger; for example, that there were more school visits to the gardens or that Wakehurst staff visited the school in terms of a specific project (table 5-3 summarises the collaborative activities during 2006-2007). Michelle, a Wakehurst educator, explained her view about the lack of progress in the collaboration:

> **Researcher:** would you say that this relationship has developed in any way or?
> **Michelle:** no, not really. …I think it just stayed as it was really; I think perhaps it could develop more if Anna was a teacher of a class but she works four days a week and she actually doesn't have her own class, so she sort of doesn't push what happens in a particular class. I'm sure if she was full time, if she had a class, she would be here more often (Interview with Michelle, 5/6/2007).

Regarding the school visit to Wakehurst Place during the year of the study, Yr6 pupils (one class) went to Wakehurst, as they did the previous years. Amy is the class teacher who organised the visit, mainly through the music teacher Anna. The visit which took place on 21st June was booked as late as 22nd May. Although from the beginning of the school year the classroom teacher had expressed her intentions to visit the gardens in relation to her science topic, plans for the actual organisation of the visit were vague. As time passed the booking of the visit was delayed, and I got worried as to whether the visit would take place. Sometimes the history of the collaboration establishes specific ways of collaborating which may be taken for granted and are difficult to change. In Oak Tree Primary's case it is usually Wakehurst that initiates the visit. The following excerpts from my research diary depict speculations about the delay of arranging the visit and the explanation that Anna gave in the end:

> Michelle asked me about Oak Tree Primary, if they had contacted Wakehurst Place but I replied no. She told me that in the past it was her ringing the school inviting them to take part in specific events and activities and the school didn't have to pay. Last year it was the first time that apart from the classes Michelle invited, Yr1 classes also visited the gardens and they paid for the visit. Michelle mentioned that maybe the payment is an issue this time. And I guess that's the reason why Michelle didn't contact her friend with whom she organised the visit. I guess it would put her in a strange situation asking her friend to come for a visit and also asking to pay as well (Research diary, 26/2/2007).

> Michelle spoke with Anna and she told her that this year they are reforming their school curriculum, so big changes happen at their school and also Amy and Anna were busy with renovating the school grounds, creating a pond, and a vegetable garden. I remembered what Ruth had told me that it is good if the school improves its own grounds as the pupils will be able to do activities outdoors everyday rather than coming to Wakehurst once a year. And it is more environmental as well. Then Michelle asked Anna if there was anything with Amy and she was not happy with my research but Anna said no (Research diary, 10/5/2007).

It was important to get that inside information about the school reform during the year of my fieldwork as it helped me understand what the school's priorities were and the pressures the teachers had been under such that they did not have time to devote to the collaboration and as a result arranging the visit came rather late that year. However, because of the good relationship between Michelle and Anna, and the fact that Amy has also worked with Michelle before, the visit arrangements went very well. The planning meeting took place at Wakehurst (15th June 2007) and it was Anna who came to speak with Michelle. The topic of the visit was related to the science unit Interdependence and habitats. Since the visit was scheduled after the SATs exams the teacher wanted the visit to be linked with the curriculum but also she wanted the visit to be a fun day. Michelle and Anna created a day rather different from the usual school visits. The activities included pond dipping, a terrestrial minibeasts hunt, a trail following the route of water at Wakehurst, and looking for animal footprints (see table Appendix 2-3 for more details on the content of the school visit). It should be noted that all the activities took place at the field studies centre and the wetlands of Westwood lake, an area that primary schools particularly do not usually visit as it is far away from the entrance and there are safety issues for the younger pupils. However, since there is trust between Michelle and Oak Tree Primary teachers, pupils' discipline is expected to be safeguarded, so the learning opportunities offered can be more challenging. During the visit, the teachers' and pupils' enthusiasm was noticeable; they were all pleased with the experience.

In relation to the regularity of the visits, Oak Tree Primary school is 7 miles from Wakehurst. The distance is short, and since it is only one class that visits the gardens, the teachers organise the pupils' parents to transport them with their private cars to Wakehurst which minimises the cost. The class teacher explained: 'That's the way we can afford it and it makes, you know, a trip like that very easy to add on to the year not just have it as a special so you know' (Interview with Amy, 27/6/2007).

However, minimising the cost of the visit does not encourage an increase in the number of visits annually. The teachers have suggested that more frequent visits to Wakehurst should be organised, but in practice it seems that the visits to Wakehurst are not a priority for the school. In addition, the short distance of the gardens from the school and related proximity of the homes of the pupils, suggest that the pupils may visit the gardens with their families. I found that during the visit, and when interviewing pupils, many of them had stories to share from previous visits to Wakehurst with their families and friends. This has a positive impact on the collaboration as the students come to a familiar place for outdoor education activities and they also come with a positive attitude towards their experience in the gardens.

The fact that the school was under curriculum reform, and was in a process of reconstructing the school grounds may have delayed the arrangements for the school visit to the gardens. However, the activities implemented during the visit could be used in the school grounds. Regarding the school grounds development, one teacher and one teaching assistant from Oak Tree Primary participated in the Wakehurst CPD (Continuing Professional Development) course Plant it, grow it, cook it, eat it (see table Appendix 2-4 for more details on the course activities). The teacher responsible for the development of the school allotment, Claire (Yr4 class teacher) participated in the course as did the teaching assistant of her class (free of charge). The course included workshops in the mansion, the nursery and around the gardens and aimed to support the teachers in developing a school allotment with the children. The area was to be used to teach the national curriculum inside and outside the classroom, and to teach about healthy eating. The course overall received positive feedback but participants expressed their preference for more practical activities on how to grow plants and develop a school allotment. Both Claire and the teaching assistant gained valuable information when attending the workshops, and in a way they complemented each other when they went back to the school. The teacher expressed how much she appreciated the course:

> **Claire:** It really was very stimulating, and came back absolutely buzzing with ideas and things like that so ehm we've got to start weaving some of the things into what we currently doing but this is our first year of growing plants and things like that; but the children are certainly keen when I told them about doing some cooking with the plants we grow.
>
> **Researcher:** if we speak about the first activity in the potting shed
>
> **Claire:** I loved that because I love gardening I loved anything to do with that ehm and children would like that, because it's practical and you have to teach them

> the skills obviously of separating the seedlings carefully and preparing the soil. That was really useful. My teaching assistant found it very useful because she is not a gardener, so that whole process was very much a learning process for her. But even I, who you know grow my own vegetables and things like that, found lots and lots really useful ideas there as well. It was great (Interview with Oak Tree Primary teacher Claire, 13/6/2007).

When I visited Oak Tree Primary school, Claire guided me to their class and outdoor space and explained her plans for the development of the school allotment, and how she would incorporate in her ideas she gained during the Wakehurst CPD course. In addition, she showed me the plants they got from Wakehurst at the end of the course and told me how they grew them at school, with the pupils looking after them. The CPD course can be evaluated as successful not only because both the teacher and the teaching assistant expressed their satisfaction by the outcomes, but also because they implemented the knowledge they learned to reform the school grounds. What was important in relation to the success of the CPD course was that the course's topic coincided with the school's priorities at the time. Hence the staff's participation in the course did not feel as something imposed and obligatory, but as something that would improve their practice. Moreover, the head teacher played a role as well, as he was the first in the school to get informed about the CPD course, and then he encouraged his staff to attend it as he thought it would be useful for the school's development at the time. Two points emerge that contribute to the success of the collaboration: that activities meet the school's priorities, and that the head teacher supports the participation of the staff in the collaborative activities.

Lastly, I would like to note that I found Michelle's friendship with Anna as the only informal link between Oak Tree Primary and the garden. I did not find any other informal links – as I had found at Cherry Tree Primary and Elm Tree Primary – such as pupils' parents working at Wakehurst and getting involved in the school activities. It should be noted that the person responsible for the environmental policy of the school and encouraging the Eco-school status was a mother who was a professional journalist and a passionate environmentalist. That person also escorted the Yr6 class as an adult helper during the visit to Wakehurst. As noted above the strongest informal link of the school with Wakehurst is the friendship between Michelle, the gardens' educator and Anna the music teacher of the school which has established a regular relationship between the two organisations and will be explored further in the data analysis chapters.

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Chapter 5 set out to describe of my research case studies which are the three collaborations between Wakehurst and each local primary school (Cherry Tree Primary, Elm Tree Primary and Oak Tree Primary). The descriptions focus on collaborative activities and links between Wakehurst and each of the three schools both in the past and during the fieldwork period, 2006-2007. Factors that influenced the collaborations positively were the history of collaboration, individual relationships and other informal links between the organisations, interdependency, familiarity, the positive role of the head teacher, the physical proximity between the settings, good organisation and communication, the size of the school. The history of collaboration in particular contributed to the development of trust and expectations which influenced the future interactions of the participants. Factors that had a negative impact on the collaboration such as the schools' priorities, teachers' workload, and lack of time to devote to the collaboration, were also noted. The following data analysis chapters focus on the three main factors that contributed to the success of the collaborations, i.e. history of collaboration, individual collaboration, and organisations' interdependency. However, other factors will be also discussed in relation to models of collaboration and factors that influence the success of interorganisational collaboration as identified in the literature (see sections 3.2 and 3.3 and in particular table 3-3). How botanic gardens and local schools collaborate can shape to a great extent the environmental learning experiences offered to the pupils and this will be also explored in these data analysis chapters. Further, how these experiences may be conceptualised in different ways by the participants will be discussed, as will whether and how beneficial links between the environmental learning experiences in the school and in the gardens can be achieved.

Chapter 6. History of collaboration

⌘ Chapter Introduction

The unravelling of stories of collaboration between Wakehurst and the local schools in the previous chapter aimed to provide a picture of the focus of the research. The point of combining the past and the present of the three collaborative relationships is to show how the history of each collaboration influenced the outcome and process of the collaboration in the present, and the learning experiences offered to the pupils. In the first part of Chapter 6, I will highlight how the history of collaboration established participants' patterns of attitudes and behaviours towards the collaboration with both positive and negative implications. The second part of the chapter describes the process and results of the collaboration of three school teachers with educators from Wakehurst, explaining how their previous experiences of collaboration influenced the collaboration's process and progress. In the end, the three stories are combined into a model setting out how the history of collaboration in relation to trust and expectations can explain the collaboration, and possible successes and failures. Continuity of the collaboration, trust and expectations are some important concepts related to the history of the collaboration, and eventually to its success. Although the history of collaboration is regarded in my research and the literature as a factor contributing to its success, I will point out possible situations where the expectations that the history created were not fulfilled. History of collaboration is the main factor around which this chapter is structured; however, a variety of other factors that influence the interorganisational collaboration and the organisations' members' interactions will be also explored. Pupils' views of the collaboration will be also examined, and whether and how pupils' engagement in the environmental learning experience was achieved. Chapter 3 discussed how experience can be conceptualised in different ways, and this chapter will explore what kinds of perspectives the research participants held in respect to the environmental learning experiences in the gardens.

6.1. History of collaboration repercussions

The research cases provide examples that illustrate how the history of collaboration is 'habit forming' in the sense that it shapes agents' beliefs and determines 'focal points' in collaboration (Schelling, 1960 in Spagnolo, 1999). Agents' beliefs may include teachers'

and educators' expectations, confidence and trust about the quality of the collaboration based on their previous experiences, and 'focal points' concern the regularity of visits and patterns of behaviours such as in relation to organising school visits (booking the visit, the planning meeting). Both advantages, opportunities arising because of the history of collaboration, and potential problems will be pointed out.

Special occasions – trust and timing

Whenever Wakehurst needs support from schools for events related to the development of the learning programme and its work, then it is local schools that are requested to contribute and, even at short notice, there is always a response from the schools. Educators feel that when the learning programme needs the local schools' support, they can trust the local schools to respond positively because of their history of collaboration with Wakehurst. For example, during my fieldwork, Wakehurst requested help from both Cherry Tree Primary and Elm Tree Primary to participate in the Billionth Seed project. As a result the project also became a learning opportunity for the pupils of the local schools in relation to the importance of plants (especially in the form of seeds) in our lives and the need for conservation (for more details on the project, see Chapter 5, pp.167, 175). Mattessich & Monsey (1992) suggested that mutual respect, understanding and trust contribute to the success of interorganisational collaboration, but in order to build these elements within collaboration, it takes time. Establishing a regularity of school visits is one way to ensure that time is given to the organisations to develop the aforementioned elements and strengthen their relationship. It should be noted that if these projects are to have the best possible results in terms of pupil learning and school participation in the projects then the preparation and implementation of the projects should be at the right time and pace. For example, the last minute organisation of the Billionth Seed project did not give the schools enough time to organise their participation; thus, from Elm Tree Primary, only two classes were able to take part. Mattessich *et al.*, (2001) have also reported that appropriate pace and timing is a factor that influences the success of interorganisational collaboration.

Regularity of school visits and the booking system

Since the schools had worked in previous years with the gardens, a pattern of collaboration had been established, especially in relation to the regularity of the visits to the gardens. All the year groups at Cherry Tree Primary had been visiting Wakehurst more than once every year, Elm Tree Primary (one year group Yr4), and Oak Tree Primary (one year group Yr6) usually had been visiting the gardens once every year. The regularity of the school visits to Wakehurst, which had been established through the history of the organisations' collaboration, in a way determines the continuity of the collaboration.

In addition, the history of how the visits had been arranged in the past determined how visits would be arranged in the future. Cherry Tree Primary pre-booked visits in the summer term for the following year. However, for Oak Tree Primary, it was usually Michelle, a Wakehurst educator, who initiated the Yr6 visits by special invitation; hence during 2006-2007 one of the reasons for the delay in arranging the visits was because the school was expected to initiate the visit that year. Elm Tree Primary school teachers normally booked the visit around a month in advance. School visits and how they are organised, and their becoming a 'habit' for the schools, as found in my research, has links to Dillon *et al.*'s (2005) research on outdoor education settings and school trips in England. Dillon *et al.* suggested that one way to enhance curriculum integration is to embed outdoor education in the routine expectation of a school year. As an example of this they reported on one case-study school and provided convincing evidence that its outdoor education provision (centred around, but not restricted to, regular farm visits across year groups) was, after seven years of development, now sufficiently embedded to be resistant to financial and other crises. More discussion on whether and how experiences in the gardens may be linked with experiences in the schools will be found in Chapter 8).

Another important factor that facilitates the regularity of the visits and the establishment of a close and stable relationship between the schools and the gardens is the distance between the settings. This was highlighted by many participants during the research. The shorter the distance and the easiest the access, the more close and regular the relationship between the garden and the school tends to be. Gibson *et al.* (2007) who examined libraries and museums collaborations reported that co-location of the partner

organisations facilitated their collaboration; however, they also noted that successful collaborations can happen with non co-located partners.

The role of the head teachers and the head of Wakehurst's learning programme

The people who hold managerial positions in partner schools and Wakehurst learning programme influenced the regularity of interaction and the establishment of a more stable relationship between the organisations. In particular the head of the Wakehurst learning programme emphasised that they have a 'duty' to support the local schools which they usually involve when they have special projects such as Wild View, but they may also offer extra support in other cases. For example, for Cherry Tree Primary's reception class visit, Wakehurst offered the minibus to transport the pupils from the school as the pupils were too young to walk on the public footpath to the garden, and they would not have been able to afford bus transport otherwise. Cherry Tree Primary's head teacher had been the driving force for the school's collaboration with Wakehurst, making sure that the school booked their visits early for the next year, and encouraging other projects as well. In the three schools of the research, Cherry Tree Primary had the strongest and most regular collaboration with Wakehurst, and one of the reasons was the head teacher's willingness, and her commitment to the collaboration. In the other schools, the head teachers were not as involved or enthusiastic, but they did have a positive attitude to the collaboration. For instance, Oak Tree Primary's head teacher encouraged his staff to participate in the professional development course at Wakehurst. I did not find much evidence of open or direct involvement in the collaboration from Elm Tree Primary's head teacher, but Elm Tree Primary is a large school, and the head has many responsibilities. McLaughlin & Black-Hawkins (2004) who investigated school – university research partnerships found that the head teacher was a key role in the partnerships models not only for their decisions about resources that would support the partnership, but also by giving status to the partnership project in the school, and by becoming the coordinators in the projects.

The involvement of the school heads, and the head of the Wakehurst learning programme is also an indication of the commitment of the organisations to the collaboration, as Thorkildsen & Stein (1996) argue that mutual commitment from the organisations which collaborate is important. This entails devoting time to support the development of the

collaboration as long term commitment is likely to be more fruitful and valuable. The collaboration between Wakehurst and Cherry Tree Primary is the case that is characterised by the highest degree of commitment between the organisations. Commitment needs to be also examined at the inter-personal level, and not just in relation to official representatives of the organisations. More analysis on that issue will follow when examining the teacher – educator interactions.

Knowing what to expect from a visit

The schools' regular visits to the gardens means that they know what to expect from a visit, or as the time passes and more collaborative activities are organised, the schools become more confident in what they can ask and organise in collaboration with Wakehurst. Participants from all the research schools identified their familiarity with Wakehurst learning programme:

> I think the more times we visit the more specific we can be about what we want (Interview with Elm Tree Primary teacher Cecilia, 25/6/2007).

> I sort of know what is on offer a little bit more now, you can almost feel you can phone up and say oh we fancy doing so and so, how about that? (Interview with Oak Tree Primary, Amy, 21/5/2007).

Due to their previous interactions with Wakehurst, the school teachers have learned and are now more confident in what they can ask from the educators, how to organise the school visits and what to expect. That kind of knowledge enables the teachers to more easily plan, organise and implement their next visits to Wakehurst.

Confidence in organising the school visits

Since teachers have collaborated in the past with educators from Wakehurst, they had learned not only what to expect and what to ask for in a visit, but also what the visit organisation requires. As a result, many teachers preferred to have a planning meeting on the phone rather than going to Wakehurst. Some still held a brief face to face planning meeting unless they were new teachers at the school when detailed face to face planning meeting was regarded as more appropriate. The planning meeting is a crucial collaborative activity during which the educator and the teacher agree on the content of

the visit, the learning objectives and the activities, speak about health and safety, and clarify what the roles of all the participants will be including the educator and the teacher, the pupils and the volunteers.

One example, Mark, a Cherry Tree Primary teacher, had been organising school visits to Wakehurst for 4 years. The teacher explained why he chose to do a planning meeting on the phone for his class 5 autumn visit:

> **Mark:** I did mine (planning meeting) over the phone. The reason I didn't go for planning meeting this year was because I had done this particular day before so that everything we did last Tuesday, I did last year. And being a busy teacher I just, you know it would have been a waste of time for me to go up there and just to sit down and have a conversation that I could easily do it on the phone a lot of lines of 'yes let's just do what you did last year, because you worked fine you know and we learned all we needed to learn'. If I was doing something completely different … then I would have to go. But that's fine. I mean, it's part of my job plan. As I was repeating something I have done before I didn't really need to go…the other thing is, John, the class 3 teacher, he's never been before so it was useful thing to go (Interview with Mark, 12/10/2006).

Mark, as with other teachers who decided not to have a face to face planning meeting attributed his decision to his heavy workload, and his confidence about repeating last year's arrangements. The time constraints due to the teachers' workload and the implications of possibly not allowing enough time for collaborative activities has been found in other research as well. Grove & Fisher (2006) examined the construction of a collaborative community amongst elementary school teachers within a large, urban school, and reported that one of the restrictions to collaboration was the difficulty that the teachers found to devote time to do the planning needed for effective collaborative work.

Moreover, the confidence with which the history of the collaboration has equipped the teachers to organise school visits to Wakehurst was a factor that enabled KS2 Cherry Tree Primary teachers to organise a non-assisted school visit to Wakehurst in the summer. As previous school visits usually had been linked to the science curriculum, on this occasion the teachers decided to do something different: orienteering and landscape drawing. If the teachers had not had a history of collaboration they would have been unlikely to attempt an 'out of nowhere' non assisted visit to Wakehurst based on orienteering – an activity which requires a great deal of organisation. During a meeting organised with the educators to present my findings, they commented on Cherry Tree Primary's initiative to organise visits on their own to Wakehurst Place:

> **Michelle:** if they (Cherry Tree Primary) have staff that doesn't change and they do come here so often then that probably gives them the confidence to come here more often and do it themselves (Meeting with Wakehurst educators, 24/9/2007).

The educators acknowledge the confidence of the teachers because of the history of collaboration which may have further implications for the school's dependency on the gardens. Further analysis of that issue will follow in Chapter 8 where the focus is on the organisations' interdependency.

Possible problems despite (or because of) the history of collaboration

Teacher's tendencies not to have face to face meetings may seem an indicator that the history of collaboration creates confidence about how successful the school visit will be, but could aso be an indicator of a teacher's loss of interest in the collaboration, an overloaded curriculum, changed priorities, or other work commitments or pressures. The head of the Wakehurst learning programme warned about the consequences of skipping planning meetings:

> **Jean T.:** If the teachers aren't doing the planning then they are not owning their visit and they cannot just hand over entire responsibility of what the outcomes are going to be to yourselves. It's a partnership (Meeting with Wakehurst educators, 24/9/2007).

Jean's point on the importance of both teachers' and educators' feeling of ownership is also supported by Mattessich & Monsey (1992) who have suggested that successful collaboration is influenced amongst other factors by members sharing a stake in both process and outcome. In doing so partners feel ownership of the collaboration, and that, over time, this feeling of ownership should be monitored, and changes made if necessary to retain and support it.

One of the relatively new teachers at Cherry Tree Primary did not have a planning meeting with the educators at all for her last school visit to Wakehurst in 2006-2007. The teacher argued that due to her previous visits to Wakehurst she had developed a trust in what the educators could deliver so she felt a planning meeting was not really needed.

> **Karen:** well unfortunately it was my fault we didn't have one (planning meeting) because I didn't contact Wakehurst and they did contact me but I completely

> forgot to call them back. I didn't actually have a planning meeting, I spoke to her on the phone about our topics and she said if I was happy if the plan was what she thought what she would usually do and I said yes and it was actually very good. If I was going somewhere I haven't been I don't think I would have forgotten (Interview with Karen, 14/6/2007).

The evidence that this teacher had lost her initial enthusiasm came when she reviewed her class visits at the end of the year and considered organising fewer visits to Wakehurst, and only if they fitted with the science curriculum:

> **Karen:** I think next year I really wanted to speak to Erica P. (Cherry Tree Primary head teacher) and ask, Wakehurst is fantastic and it's got so much opportunity there, but I really don't see the point of going unless it fits with your science topic. What was the point in going when it is not actually enhancing the science topic whatsoever? (Interview with Karen, 14/6/2007).

Karen's example indicates that when the teacher loses enthusiasm for the collaboration (for whatever reason) with Wakehurst then the collaboration weakens. The lack of a planning meeting between the teacher and the educator meant that the educator was given the entire responsibility for the organisation and outcomes of the visit, despite an understanding that shared responsibility and input from both partners is very important for a successful collaboration. Clearly in this instance this did not happen. Other reasons for Karen's change of attitude should be also considered such as school pressures. The fact that Karen insisted on a clear link of the visits with the science curriculum suggests that she may have been under pressure with her curriculum planning.

In another example a teacher regretted not having a face to face planning meeting as his decision resulted in the visit not meeting his expectations.

> **John:** well I had a different educator that I worked with this time and the last time we met face to face and talked for a while and we planned together but this time it was just over the phone. I mean it was a lot easier for me cause I didn't have to think about it…I think they could have done more work on Rocks an soils; I thought I made it clear with the topic and maybe I should have gone up there and do a one to one meeting rather than over the phone instead of giving the job to her to plan everything (Interview with John, 13/3/2007).

Here, John acknowledged that he should have had a face to face meeting with the educator regarding the visit, and he was disappointed by how the visit went in the end. The reason for the teacher's disappointment was the lack of communication between

himself and the educator about the visit topics, and the lack of mutual understanding about the expectations of the visit. John attributed the problems that arose during the organising of this visit to the fact that each time he had worked with a different educator, and felt that this educator should have had a better understanding of his expected outcomes.

The failures of the planning meetings between teachers and educators will be discussed in section 6.3 in relation to their experience, age, and pressures the teachers face because of their workload and Ofsted inspection requirements. In addition, the fact that the teachers did not, or could not, devote time to the collaboration meant that they could not commit to the same degree as the educators to the collaboration. Thorkildsen & Stein (1996) have argued that mutual investment of the organisations which collaborate is essential, with both committing people who are willing and eager to collaborate, and who have enough time to do so. Hence, the lack of teachers' time for the planning meetings has a negative impact for the success of the collaboration. Later on in this chapter, and in Chapter 7 as well, I will discuss examples of other ways that teachers can work successfully with educators without having face to face meetings. It is important to explore this issue recognising the big impact that time constrains have on teachers' work. The point to be made is not that teachers should find more time to devote to the collaboration but rather how teachers and educators can find ways to collaborate successfully despite the time constrains (for example, see Amy's and Anna's story in Chapter 6, p.214, and Joyce's collaboration with Heather and Michelle in Chapter 7, p.231).

The fact that the gardens have a history of collaboration with the local schools may hide risks in repeating activities from previous visits. For the third Cherry Tree Primary class 2 visit to the gardens, the teacher did not have a face to face, or a phone planning meeting. She justified her decision by saying that she trusted that the educator would deliver a visit related to her science topic she had been teaching in the school (Habitats). As a result, one of the activities, the story stick trail, was organised for the pupils who had had the same activity during the first visit of the same school year. In the following excerpt [A], the educator explained the lack of communication with the teacher about organising the visit activities. This is followed by an excerpt [B] from the pupils' interviews who recognised that they had done the same activity before.

[A] **Researcher:** did you have a planning meeting with the teacher?

Juliet: no, she rang me up, last week and said she was very sorry, she hadn't done the planning meeting and I said what do you want? And she was a little bit, I don't really know

Researcher: so how did you plan the activities?

Juliet: she said she wanted minibeasts hunt and pond dipping so that's what she got. Why are you asking?

Researcher: cause they had done story sticks last time

Juliet: oh they (the pupils) said that, she (the teacher) didn't mention that.

Researcher: and I don't know I was just wondering, I always ask about the planning meetings and how did it go and what was discussed.

Juliet: well she didn't have one (Interview with Juliet, 11/6/2007).

[B] **Researcher:** what did you do next? …What about story sticks, tell me about story sticks.

Erica: I took mine apart cause I didn't really like it cause we had already done the story sticks (Interview with class 2 pupils, 14/6/2007).

Burbules (2004) explores four processes of engagement through which immersion happens, one of which is interest, arguing that when the experience is interesting enough it allows the pupils to 'pick up new elements, even with repeated encounters' (ibid, p.166). Thus, an interesting experience is like a puzzle that is challenging enough to engage the pupils in trying to work out what is going on. Obviously in the instance above the experience was not interesting for Erica; and the issue was not that Erica has been at Wakehurst before, but that she has done the same activity in a previous visit, and was not able to pick up any new element in this repeated encounter. This resulted in Erica's negative feelings, and frustration about her experience.

In this case, both the teacher and the educator have responsibility for the above failure during the class 2 visit i.e. the repetition of an activity that class did in a previous visit to Wakehurst; the teacher because she avoided a detailed planning meeting so there was no opportunity to discuss with the educator what had happened in the previous visits, and the educator for not looking at the Wakehurst records where she would have found details on the activities the same pupils had done at the gardens before. In this case the lack of the teacher's involvement in the planning the visit and the lack of the educator's organising skills had an impact on pupils' immersion into the experience in the gardens, and the effectiveness of the visit.

In order to avoid situations like the above, the educator either speaks to the educator who was responsible for the previous class visit or checks the records and the evaluation of the previous visit. For example, Kelly, a Wakehurst educator, when organising Cherry Tree Primary's spring visit spoke with the previous educator who taught the pupils in their

autumn visit to Wakehurst. This was done to clarify what had happened in the past, and she also looked at the records to check. Kelly explained that during their phone planning meeting she proposed to look at the records and then contact the teacher with a set of activities[16]:

> **Kelly:** I said 'well I'll go away and think about some ideas and send you a proposed timetable and then invite your comments on that'. Then went away looked at the records, saw that he had done plant eater, parts of a plant and ephemeral plant and I thought well they haven't done healthy unhealthy plants workshop so we'll do that so I did the timetable and sent it off with the letter that you saw and I didn't hear anything more, so that was it (Interview with Kelly, 1/3/2007).

It was only the first year of Kelly's teaching at Wakehurst (she had been teaching languages in schools previously for some years) so she had not had much time since she started to learn from mistakes or to acquire substantial experience. However, she was good at thinking possible problems through when organising a school visit and doing her best to avoid them, i.e. both looking at previous records of the class visits, and asking the educators who have taught the class before for some advice. It should be also noted that Kelly was able to go through these processes that supported her planning as the teacher did not have much input, not only because of her good organisation skills but also because of the well developed learning programme; in particular, the records of previous visits (going back two years) were very useful in planning the future school visits. In addition, the meeting room in the mansion, the headquarters of the learning programme, where the educators and volunteers prepared for the school visits, was a very good space for educators to discuss informally with each other issues related to the planning and implementation of the activities.

Another situation where the history of collaboration may be ignored is when teachers, because of their previous experience may want specific activities to be repeated for their next visits but, due to miscommunication, their expectations fell short. For example, Elm Tree Primary teachers who had had activities in the seed bank on previous visits expected to use the seed bank again for their next visit. However because of miscommunication, and the informal way the visit was organised no activities took place in the seed bank.

[16] It should be noted that the activities available for the school visits can be chosen from a list of set activities which comprise the learning programme (see Table Appendix 3-6) or they can be tailor made, provided the teacher requests and discusses with the educator in detail what they would like their pupils to experience during the visit to Wakehurst. Examples of tailor made activities which are usually the result of a close collaboration between a teacher and an educator will be given in Chapter 7.

When a Wakehurst educator, who was teaching science part time to Elm Tree Primary Yr4 classes, heard about their forthcoming visit to Wakehurst, she proposed herself as their leading garden educator. That kind of arrangement seemed to create confusion between the roles of the people involved in the visit, and for the organisation of the topic and the activities to be carried out on the school visit. As a result, the planning meeting between the main class teachers and the educator was not clear and their expectations were not fulfilled. For more details in relation to the Elm Tree Primary visit in 2006-2007 see Chapter 5, Elm Tree Primary 'collaboration in progress'. This reinforces Mattessich & Monsey's (1992) point that responsibilities, roles and rights, and how they can be used and fulfilled, should be clearly defined and understood by all partners through mutual agreement and open communication in order to contribute to the success of the collaboration. The lack of clearly defined roles and responsibilities that occurred during the Elm Tree Primary visit militated against the success of the collaboration.

Mattessich & Monsey (1992) also argue that where there is a history of collaboration, a shared understanding of participants' roles can normally be expected. Contrary to this, in the Elm Tree Primary visit discussed above, a confusion of roles occurred in relation to the planning meeting, about the activities that were to be implemented, and about who was to be the person responsible for the discipline of the pupils. The fact that the educator was also a teacher of the class at school became a negative factor as it contributed to the confusion of the roles and responsibilities during the visit. Although I did not find any obvious relationship issues between the educator teacher and the main classroom teachers of Yr4, I acknowledge Louise's comment (Wakehurst's learning programme administrator) who deliberately avoids arranging an educator leader who is also a teacher at the same school to lead the school's visit because she does not normally, have a knowledge of the relationship between the educator with the other teachers in the school. My research (elaborated in the next chapter) provides evidence that individual collaborations are a very important factor for the success of interorganisational collaborations, but that when encouraging these kinds of relationships attention should be given to the individuals from the two organisations who may have little history of interactions or a negative one.

Opportunity for improvement because of the history of collaboration

When teachers revisit the gardens and want to implement activities they have carried out with other pupils, there is the opportunity to give feedback to the educator about how the activities went the previous time, and agree on improvements if needed. Joyce, from Cherry Tree Primary organised a class 4 visit to Wakehurst in spring 2006-2007. She had organised the same visit on Shelter building in 2005-2006. The first time Joyce organised the Shelter building visit with Michelle, they had combined this morning activity, building shelters with natural materials in the woodland area of the gardens, with an activity on rainforest music – playing music instruments made of plants in the mansion – at the end of the day. Both teacher and educator reviewed how the day went and agreed that by the time the pupils went to the mansion they were tired and could not focus on the rainforest activity. For that reason they decided to keep the activities in the same area of the gardens so that the pupils would not get too tired, and also have them on the same theme such as tracking animals, rather than rainforest music.

Interestingly, the improvements that the educator and teacher agreed on the Shelter building day were also implemented in another school's visit (Sycamore Tree Primary). During my fieldwork, apart from the main schools of my research I had the opportunity to observe other schools' collaborations as well, which provided data relevant to the cases. On one of these occasions I observed the planning meeting of a teacher from Sycamore Tree Primary who wanted to organise a similar day on Shelter building. During the planning meeting the educator (Michelle) explained and proposed the new improvised scheduled for the day:

> **Michelle:** what Joyce did last year was she wanted to do the rainforest music session because she was doing something about the rainforest as well; so we came back here (the mansion) and did that, but we both agreed that really it would have been better to have continued with the same theme. They got tired by then and they kind of switched off by the time they got here, and I think if we stayed out there we would have kept them for much longer; so what we agreed to do this time is, to just go into the seed bank which is quite near where we are working, and then go back out into Bethlehem wood. I've sorted some stuff out today, things to do with tracking (Planning meeting with Sycamore Tree Primary teacher, 13/3/2007).

Michelle's and Joyce's mutual decision to improve the visit to develop all the activities on the Shelter building theme, rather than doing an activity on rainforest for the second

half of the visit, is based on the notion of an educative experience (Dewey) which is interactive and achieves a continuity in which the past and the present are bridged to create the future. In this example the teacher and educator not only based the visit on a topic that the pupils were doing in school, on Shelter building, ensuring a continuity between the experience in school and in the gardens, but they also made sure that the continuity of the experience remained throughout the visit by replacing the rainforest activity with one on survival skills. Roberts (2008) has identified different ways that experience can be conceptualised and in this example the teacher and educator adopt the interactive view of experience[17].

The teachers' backgrounds, skills, and professional development ambitions influence not only the success of collaboration but also the range of the benefits from it. Here, the examples of educator – teacher collaborations that resulted in improving the learning programme with new activities, or through changing previous activities, involved highly skilled people with a wealth of teaching experience. Educator (Michelle) and teachers (Joyce, Anna) were not only talented but were also driven to improve their practices.

In all the above examples, the history of collaboration was seen by the teachers and educator as having a variety of outcomes such as positively influencing the collaboration, but it can also have problems. Possible problems included some stages of the collaboration not being followed through, e.g. the planning meetings, resulting in organisation and miscommunication issues between teachers and educators, giving rise to unfulfilled expectations. In the literature, the history of collaboration has been pointed out as one of the factors that contribute to collaboration success. In particular, Mattessich & Monsey's (1992, p.19) research review suggests that:

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[17] Roberts' (2008) categorisation of ways to conceptualise experience includes:

(i) an interactive perspective based on Dewey's theory which suggests that an experience should create a continuity in which the past and present interact to create the future,

(ii) an embodied experience perspective based on phenomenology which highlights that experience becomes real because we sense it and live it through,

(iii) an experience as praxis approach based on critical theory which highlights experience in a more political sense as a tool to reproduce inequalities or a means of emancipation,

(iv) a neo-experiential education perspective based on neo-liberal ideology that highlights experience as something technical and instrumental, and efficiently controlled, to fulfil the mainstream education agenda, and

(v) a post-experience education perspective based on postructural philosophy that examines the role of language in mediating experience.

All these perspectives will be used in what follows to examine the research data and unveil whether my research participants held common or different perspectives on environmental learning experiences, and the implications of that. For more discussion on the different ways of conceptualising experience, see section 3.7, p.62.

> a history of collaboration or cooperation exists in the community and offers the potential collaborative partners an understanding of the roles and expectations required in collaboration and enables them to trust the process. Other things being equal, collaborative efforts will most likely succeed where cooperative or collaborative activity has a history or is encouraged.

In addition, a positive history of collaboration between both organisations (i.e. schools and gardens) in general, and between members of the organisations (i.e. teachers and educators) contributes to eliminating barriers to outdoor education which were identified by Rickinson *et al.*'s (2004) review of research on outdoor learning. The review pointed out barriers such as 'fear and concern about health and safety, teachers' lack of confidence in teaching outdoors, curriculum requirements limiting opportunities for outdoor learning, shortages of time, resources and support' (ibid, pp. v-vi). All these local schools have a long term relationship with Wakehurst and the history of collaboration has established specific expectations, trust, and awareness of what organisations can provide to each other resulting in the reduction or elimination of such barriers. For instance, issues of health and safety rarely came up as a concern in my research. Wakehurst has developed a thorough risk assessment of the gardens areas in relation to their educational use. The list is also provided to the schools and discussed during the planning meetings so that the teachers can be assured that the gardens are a safe environment for the pupils' outdoor learning. The schools, having collaborated in the past with Wakehurst, also do feel that the gardens are a safe environment for an outdoor education visit. The teachers still consider and take safety issues seriously in relation to the school visits to Wakehurst, but not in a way that prevents them from organising the visit. Similarly, the schools and teachers who have used Wakehurst on many occasions for their pupils' education, consider the expertise of the gardens' educators, the resources provided by Wakehurst, and the activities linked to the national curriculum, as important factors for organising the school visits to the gardens. All these factors will be discussed and analysed further in Chapter 8 which focuses on organisations' interdependency.

6.2. History of collaboration and pupils' views

The history of collaboration between Wakehurst and local schools has a meaning not only for the organisations, teachers and educators, but also for the pupils. The pupils often acknowledged that there is a relationship between their school and the gardens and

especially referred to both organisations as having environmental friendly policies and practices. More importantly, the pupils referred to a personal attachment they have developed with the gardens as the following excerpt illustrates:

> **Peony:** you know after we've been there a few times we start to know most of the people who help us around which is quite nice because if you get all different people all the time you never really meet new people. It's fun to meet new people but it's also nice to meet old friends like, we remember all the people there, we have a lot of fun there most of the time so it's hard to forget really (Interview with class 5 Cherry Tree Primary, 4/10/2006).

This kind of comment was expressed by a number of Cherry Tree Primary pupils who had been visiting the gardens more than once every year, and who had developed an emotional attachment to Wakehurst as a place, and also to Wakehurst staff. This kind of relationship between pupils and the gardens staff can be beneficial for pupils learning. Pupils who participated in school collaborations with musicians in the South East of England, reported that the non-hierarchical, real world relationship they developed with the musicians, which was quite different from the relationships they shared with their teachers, supported their learning. Those collaborations involved the pupils creating, and performing newly composed pieces with the help of a composer and three professional musicians (Burnard & Swann, 2010). Moreover, Martin (2004) suggests that outdoor education can help people develop a relationship with nature as it can provide the language, a direct experience, specific relationships with places, and relevant skills and competencies. However, Mannion *et al.* (2006, p.14) add, that to develop deeper relationships with a place requires multiple visits across a diversity of seasons so that participants can explore the many dimensions of a place through different approaches (ecology, natural history, human stories), and through time spent with others and also alone. Cherry Tree Primary pupils talked not only about the relationship they and their school have developed with Wakehurst, but also how much they enjoy their school visits there.

> **Anthony:** we enjoy it (going to Wakehurst), teachers enjoy it
> **April:** it is really fun, because even though some people think plants are really boring and most people think maybe if you go to all the time to Wakehurst its boring plants but when you actually get there you find it really fun and
> **Ben:** it's a bit like, it gives you information as not being boring
> **April:** in a fun way (Interview with class 5 Cherry Tree Primary, 4 /10/2006).

The pupils acknowledged that the enjoyment from the visits is a collective experience shared with their teachers as well, and they remarked on the educational purposes of the

visits being combined with fun. Here, previous visits had established pupils' motivation and high expectations for their learning in future visits. Falk & Dierking (2000) suggested that one of the factors that contribute to individual's learning in museums is their personal expectations and motivations which are part of their Contextual Model of Learning. Rickinson *et al.* (2009) suggest three lenses for understanding environmental learning in the school classroom one of which was focused on students' emotions and values. They argue that emotions can be seen as 'a driving force underpinning engagement in learning' (ibid., p.48), while in other cases feelings of dislike or distaste may lead to disengagement. Some of the examples they provide concern students' emotional response to the subject matter. In a similar way my data show pupils' positive emotions to the subject matter i.e. plants which, as they note, for others may sound boring. Burbules (2004) has pointed out that one of the aspects of immersion in an experience is whether it is involving, which means whether the individual has a reason to care about the experience, and that, getting enjoyment from it, can inspire individual care. It is clear that the pupils' comments on the enjoyment they get from the visits are an indication of how they are getting immersed in the experience.

Some teachers and educators expressed their concerns, especially for Cherry Tree Primary pupils, about visiting the gardens too often. However, as the above excerpt illustrates the pupils enjoy the visits. Cherry Tree Primary pupils acquired what Dewey (1938, p.48) called collateral learning which involves

> 'the formation of enduring attitudes, or likes and dislikes that may be and often is much more important than the spelling lesson or lesson in geography or history that is learned. And the most important attitude that can be formed is that of desire to go on learning'.

In the case of the Cherry Tree Primary pupils, I found a positive attitude to learning at Wakehurst especially when compared to school learning. In particular, the pupils appreciated seeing real plants rather than pictures of them, having a sensory experience in the gardens which is not possible in the class, and the more free-choice character of learning at Wakehurst in comparison to the more structured, very well defined and controlled way they have to learn at school. During the interviews, the pupils expressed how much they enjoyed and anticipated learning at Wakehurst, where they regarded learning as fun, because of their previous experiences there.

In addition, many pupils from all my research schools had a personal history with Wakehurst. As they were living locally they had been visiting the gardens with their

friends and families, and during the school visits I noticed pupils commenting on previous personal experiences they had had in the gardens, while they also seemed familiar with the gardens environment. The gardens had a personal significance for them; for example, one pupil commented during one visit that she had spent her birthday in the gardens recently with her family. Kruger (2001 in Wason-Ellam, 2010, p.280) has argued that 'we cherish places not just by what we can get from them, but for the way we define ourselves in relation to them…[as] places with stories, memories, meanings, sentiments and personal significance'. During the interviews the pupils expressed how they feel about visiting the gardens with the school and with their friends and family.

> **Violet:** it's nice to go to Wakehurst Place with the school and you go to different parts of Wakehurst Place, and then going to Wakehurst Place with your family because when you are with your family you are not allowed to see the study centre and it is also when you go with family and friends you normally go to that manor house and you normally stay around that area but we didn't go there
>
> **Brad:** we went through all the nature bits
>
> **Violet:** yeah. It's different. It's the same place but you are going to different parts of it. So it was nice. You are seeing more of Wakehurst Place than you normally do with your sort of family (Interview with class 6 Oak Tree Primary, 27/6/2007).

The pupils did not express any preference for visiting the gardens with their families compared to visits with their school, in fact valuing both as the visits allowed them to look at the gardens in a different way. In relation to their learning, they also valued both kinds of experience, particularly learning in a different way and visiting parts of the gardens they would not be able to visit with their families. The pupils emphasised the significance of the physical context of their learning experience – which was suggested by Falk & Dierking (2000) as something that also influenced learning in museums – and pupils also noted the fact that they got to know different areas of the gardens depending whether they visited with families or with school. Pupils got engaged in the experience in both situations as these were interesting. See Burbules (2004) who explains interest as one of the processes of an individual's immersion in an experience – in this case, allowing them to discover new areas of the gardens despite the fact that they had been there before. The evidence coming from my research contradicts Jensen's (1994) research which suggested that children prefer visiting places (a museum in this case) with their families rather than with their school class, because they found it a more enjoyable experience. They could certainly exercise more choice and had more control on their learning with the family, and they did not have to complete worksheets as they would have to if they visited the museum with their school. In Jensen's research children

emphasised choice and control and the latter was a factor identified by Falk & Dierking within the individual context of their Contextual Model of Learning. This means that the children in Jensen's research appreciated the free-choice learning experience when they visited museums with their families as opposed to the more structured and controlled experience during visits to the museums with the school. In my research pupils expressed their own motivation to learn in the gardens even when they visited with their school, and although they did not have control on determining the visit's focus, they still tended to enjoy the experience. Moreover, the pupils expressed an interactive approach to experience (Roberts, 2008) as they connected their family experiences in the gardens with their experiences with the school.

The fact that pupils have a familiarity with Wakehurst both because of previous visits to the gardens with the school and visits with friends and families, raises the issue of the novelty of the place and the influence on learning experiences. Orion & Hofstein's (1994) research on learning experiences on fieldtrips showed that the learning performance of students acquainted with the field trip location was significantly better than those not so familiar. Similarly, Anderson & Lucas's (1997) research on student experiences in the 'Queensland Sciencentre museum' indicated that students who had previously visited the museum, and had received the novelty reducing orientation activity at school, performed significantly better in a post-test than the control groups. This study suggests that high levels of novelty are likely to interfere with learning. On the other hand, Ballantyne & Packer's (2002) research on nature-based school trips in Australia, indicated that a balance between familiarity and novelty is important in preparing students for a field trip. Their research findings showed that the students who had done pre-visit activities at school were looking forward to their visit more than those who had not. Also, the students who had not visited the particular site beforehand were looking forward to their visit more than those who had. Although my research is not a comparative study of pupils who had visited the gardens previously and pupils who had never been in the gardens before the school visit, my research indicates that pupils having developed a familiarity with the gardens' environment had developed a positive attitude to being and learning at Wakehurst. In accordance with Ballantyne & Packer's (2002) argument, the data indicate that what the pupils value when they visit Wakehurst is the novelty of the experience, and even if they have visited previously they anticipate seeing, doing, and learning something different. So, within the familiar they anticipate novelty which is an important point for gardens – school collaborations. Burbules (2004) also raised that issue, arguing that for an experience in a familiar context to be interesting, then it should have enough elements in it that allow us to appreciate it or understand it in a new way. My research suggests that

the teachers and educators could consider pupils who live locally and may have visited the gardens with their families, and pupils who visit the gardens regularly with the school (where a history of collaboration exists) so that every time they create a special experience for them. Falk & Dierking (2000) explain that people learn better when they feel secure in their surroundings and know what is expected of them, but also that when the individuals feel oriented within museum spaces the novelty enhances the experience. They identified the factor orientation and associated advance organisers within the physical context of their Contextual Model of Learning in museums.

6.3. Towards a model of building collaboration

This part of the chapter will focus in more detail on how the history of collaboration contributes to its continuing success, and look at what kind of history may best contribute to that success. In order to do that, I looked at each school teacher's stories of collaboration with Wakehurst. For reasons of economy, I shall present three of these stories to develop a model explaining how the history of collaboration influences the success. In the literature review, which focuses on theories and research on collaboration, I have already explained different views on success criteria. For this specific context i.e. collaboration of botanic gardens and schools, success is assessed according to whether the learning objectives of the collaboration were achieved (i.e. the pupils learned, through the activities, the predetermined objectives set out for them to learn), but also according to the levels of satisfaction that the collaboration outcomes achieved for all the participants: pupils, teachers, educators and volunteers.

Reference needs to be made to how these stories were produced and their use in my research. Richardson (2000) argues for researchers to make more explicit how stories are created while Hart (1996) suggests challenges in the use of personal narratives for describing the current state of educational practice from an individual's point of view. Being reflexive and in particular providing 'adequate self-awareness and self-exposure for the reader to make judgments about the point of view' (Richardson, 2005, p.964) is one of the criteria that can be used to assess the quality of any ethnographic account. Richardson (2005) suggests various creative analytical writing practices from which I was able to choose when writing about collaborative phenomena from different subject positions, and bringing different points of view into dialogue with each other, and also when writing my own account of the collaboration events I observed, and then by

interviews and informal discussions getting the participants' stories of the events. Hence, the resulting stories are an amalgamation of my own point of view and the participants' point of view on the interactions and the events that occurred during the collaboration of Wakehurst and the local schools. I will make it clear when my analysis is based on my personal researcher's point of view.

In the methodology chapter, I have explained my fieldwork experience during which I was living in accommodation in the gardens which, linked to my previous work experience as a botanic gardens educator in Greece, had an impact on how I interpreted the collaborative activities I observed. Additionally, the fact that I did not encounter access problems during the fieldwork at Wakehurst, but did have access issues in the schools, might have influenced my ability to fully understand teachers' constraints in the school environment in contrast to the more in-depth understanding I developed of the pressures that educators face in their everyday practices working within the botanic gardens organisation. Hart (2002, p.142) argues that

> interpretation is involved, of course, in providing convincing accounts of what a story means, or so that it makes sense not only to the teller but the listener, particularly if the story is told by a researcher/narrator other than the author.

In that sense, my stories comprise different layers of interpretation: my own interpretation of the events I observed, the other participants' interpretations' of the events, and my interpretation of the participants' accounts of the events. The reader should be alerted to these issues of representation and meaning-making in the elicited stories of collaborations between botanic gardens and schools, and between individuals across the organisations. These here are only one of many possible versions as Hart (1996) argues. Lastly, the stories were chosen as the appropriate media to present the data so that the reader will be able to immerse in the collaborative phenomena based on the argument that 'narrative is one of the fundamental sense-making operations of the mind and perhaps the best window into how we think, and is foundational to learning' (Hart, 2002, p.142).

I will now continue with presenting the stories of three teachers' collaborations with Wakehurst educators.

Karen's story – lack of interest

Karen was a relatively new teacher at Cherry Tree Primary (this was the 2nd year of her teaching career). She organised the first visit for the year 2006-2007 to Wakehurst for class 2 (Yr1 & Yr2 pupils). The theme of the visit, Get Creative, comprised the plant eater workshop, a sensory trail, and ephemeral art, activities related to science, personal, social and health education, and art and design. Karen was relatively pleased with the visit although she pointed out that the trail activity could have been more focused and related more obviously to the class topic Senses. The educator (Elsa) also acknowledged weakness in the trail. The activities the pupils enjoyed most were the art activities during the day and they remembered things they had learned, particularly from the workshop. The teacher explained how the visits are linked with the school topic and the importance of planning meetings:

> **Karen:** Wakehurst is what we use all the time, so we tend to use it for something that fits more with our topic.
>
> **Researcher:** but would you say that if you hadn't done the planning meeting at Wakehurst would it be any different? Do you think it was helpful?
>
> **Karen:** I think it is cause as I said they would change their activities to suit whatever we are doing in class if we didn't go we just, probably we would do a basic activity and it might not fit with what our topic is, so it is something useful to go because they are really good in changing what they already got to suit us (Interview with Karen, 4/10/2006).

For the second visit Karen felt more like 'she had to go' and was not so enthusiastic. She related going to the gardens only if it would fit with the science curriculum. The class 2 science topic in the spring was Space, hence could not be related to activities in the gardens. The theme of the visit was Plants and comprised an introduction to parts of plants, planting seeds in the potting shed, the story of a sunflower, a trail, and making a spring crown. Karen went for a planning meeting to Wakehurst, and the educator got the impression that she felt as if she had to go rather than was enthusiastically getting involved with the planning of the visit. Although Karen told me that she was pleased with how the planning meeting went, I should point out that one of the activities during the visit (introduction to parts of plants) had been repeated from the previous visit and Karen mentioned the repetition. She was also expecting the story of a sunflower to be linked to Van Gogh's sunflowers painting as she had done some preparation work in the class before the visit, but her expectations fell short. Although I asked both Elsa and Karen the reasons for the problems, I was not able to find a satisfactory answer (both

contradicted each other with their answers as the excerpts bellow illustrate). Since I missed their planning meeting I can only say that they had a misunderstanding possibly, despite having a face to face planning meeting, because the meeting was not focused enough. Karen's lack of enthusiasm may have played a significant part in that. In the event she was disappointed with the trail as she felt that every time she visited the gardens she had been going on the same trail, as she explains in the interview excerpt below. During the interview with the pupils, I found out that the pupils had done one of the visit activities (planting a sunflower seed) in the class the previous year with another teacher, and generally what they learned from the visit was only rather small facts that slightly extended their previous knowledge. Clearly during the planning meeting there had not been much discussion about the previous knowledge of the pupils. Taking into account both Elsa's and the Karen's rather vague descriptions of the planning meeting, it can be inferred that they share the responsibility for the lack of detail and the organisation mistakes during the visit. The following excerpts illustrate some problems and missed opportunities that occurred during the visit:

> **Karen:** They do a trail every time we go and it seems to be the same trail. I am not really sure. It's nice to walk around, and it's nice the children see the plants but we've been on that particular trail quite a few times before, well I have; I don't know about the children, definitely I've been with these ones…The only thing that, going back to the planning meeting, that would have been nice and I think she must have forgotten, she was going to read them a book. It was a fiction book about a little girl that falls into Van Gogh's painting and she didn't. That's why we did the Van Gogh work (at school). She had asked me to make sure that they knew Van Gogh. And I don't know, I meant to ask her cause I thought it would have been perfect for that age, and actually I was going to ask you if you would be able to get the name of that book and the author. That would be really good because me and Esther (the other classroom teacher) were both expecting that to happen and it didn't…I do think we are going too many times; I think three times a year is too much, but I would definitely go in summer because I think the summer activities would be better and we are doing Habitats and there are obviously the ponds and I think perhaps I would have skipped this middle one (visit) or perhaps the one in the autumn but I would definitely go in the summer. And I think it would be better for the class because we can actually fit our visit with our topic which is Habitats where this time we didn't, it was just a one off lesson, it didn't really have anything to do with what we were doing in science (Interview with Karen, 27/3/2007).
>
> **Elsa:** She (the teacher) said that the head teacher said she had to come.
> …**Researcher:** something you didn't enjoy from the visit?

> **Elsa:** having to get a little bit cross with the children because we are not supposed to do the behaviour management but I found the teacher was a bit slow. And then I started to do it and then of course she left it to me. They weren't bad, but sometimes I thought I am fighting against them. I had to shout to make myself heard.
>
> **Researcher:** you know I asked them cause you usually are trying to combine the visit with the subject they are doing at that time so I asked the teacher what is her subject at this period and she told me it is Space, and that she couldn't combine it but before the visit they did kind of preparation activity cause they spoke about sunflowers and she showed them Van Gogh paintings and how he painted so
>
> **Elsa:** oh I wish I have known that because I have that wonderful book Katie and the Sunflower; there's a story of a little girl who looks at Van Gogh's picture and then she goes in to the picture and actually I had the book with me, I thought if it rains I do the story. If she had told me (Interview with Elsa, 19/3/2007).

The interview data show that there were no clearly defined roles and responsibilities during Karen's class visit to Wakehurst; for school visits it is the teacher's role to ensure pupil discipline something that did not happen in class 2 visit that time. The discipline issues can be attributed to the lack of clearly defined roles, something that has been identified in the literature as a factor in a successful collaboration (see Mattessich & Monsey, 1992; IMS, 1996). In addition, Karen's ineffective control of the pupils might be attributed to the fact that she was recently qualified as a teacher and so lacked experience. That comment however, does not imply that all novice/newly qualified teachers cannot effectively establish pupil discipline as that is a skill that may be acquired by the teachers in training. Furthermore, the fact that the visit could not be linked with the science topic that the class was studying at the time, meant that Karen did not see the visit as beneficial, either for her teaching goals, which are mainly driven by the national curriculum or for her pupils' learning. It is important for collaboration success that partners see the collaboration as in their professional self interest (Mattessich & Monsey, 1992; IMS, 1996) and clearly, for Karen, this specific collaboration did not contribute to this at all. The more important point to be made, though, is that Karen in this case did not choose to collaborate; the decision was rather made by the head teacher at the end of the previous school year. See later for more comment on the issue of multiple layers of decision making, as this issue also came up in other cases. Karen's critical stance towards the regularity of the visits can be attributed partly to the fact that she felt the school was visiting the gardens too often. That it was not Karen's personal choice, or that she had not found an educator with whom she was happy to collaborate with (as other teachers had), were other possible factors.

As far as Karen's perception of pupil's experience in the gardens is concerned, she emphasised an interactive notion of experience (Roberts, 2008) which was not followed through during the particular visit. Karen was enthusiastic about the sunflower topic, as the excerpt on p.193 shows, but she was disappointed eventually with how the visit went – and she cited another teacher, Esther, who felt the same – because the educator did not use a story about sunflowers which would have been linked with pupils' work on Van Gogh at school. In this case due to the miscommunication issues the collaboration failed to provide an interactive experience for the pupils.

For the summer term visit, Karen did not go for a planning meeting at all (see Chapter 6, pp.192-193[18]), explaining that the visit was related to the science topic Habitats and as such she trusted that the educator could organise the visit herself and make it satisfactory. The educator, Juliet, organised the visit on Habitats which consisted of camouflage activity, a minibeasts' hunt, a trail with story sticks, and pond dipping. Since there was no planning meeting, not even on the phone, the organisation was not good. One of the activities, the story stick trail, had been done with the pupils in the autumn term, and they were unhappy about doing an activity they had done before. In the following excerpt, Karen explained her views on the repeated story stick activity:

> **Researcher:** and what about the story stick?
>
> **Karen:** oh the story stick, yeah I should have told (the educator) that we just make one every single time we go there but the children they do enjoy it; I think this story stick was probably better than the other times because the lady, Juliet I don't know, she seemed to actually give them time to pick things up when we walked. It was for them to stop and just to look and pick things up and in the end I thought the sticks looked better. Usually we are walking and the children bend down and they've been rushed to move along by the end of the day they just end up with a few twigs whereas this time she got them to pick up petals, and it was almost as she hadn't planned the walk; it was like if the children were interested we stopped and if they wanted we carried on. So I thought that was actually probably better this time. So I have to remember this for my planning visits next time and perhaps ask them if they could do that rather than do the walk that we always do.

[18] The same data (parts of Karen's story) have been looked at in different ways and with different emphasis between the two sections of Chapter 6. For example in the problem of the collaboration section, part of Karen's story is compared with other stories, cases and some resolution is also proposed because of that. In the second section of the chapter the same incident is examined within the whole of Karen's story and as an essential part of the storyline.

> **Researcher:** but I am reading at the moment the previous visits that you did and I saw that the first time you did the trail you wanted to be more focused on what were the learning objectives of the activity.
> **Karen:** yeah possibly I think. At Wakehurst you almost, I know it's not possible to do this, because we go so much we almost need the same leader every time we go because obviously we had three different people and three different people don't know what we've done before, although they know roughly what we've done, they don't know walks and things but I think the first time it was important that it was structured and focused whereas I think this in the summer term it was lovely weather and the children were very happy just strolling and stopping where they really wanted to, picking things up (Interview with Karen, 14/6/2007).

In this instance Karen argued that consistency is important, i.e. having the same educator when she organises visits to the gardens. That view fits with the model that will be presented later in this section, where the collaboration of teachers with the same educators in consecutive visits becomes an important factor for the success of the collaboration. Furthermore, Karen, in her evaluation of how the trail activity went during the summer visit, argued that the pupils were more immersed in the activity than when the same activity was implemented during the autumn term. She especially highlighted that the experience was more interactive, as it allowed more opportunities for the pupils to participate, and more interesting and involving as it followed pupils' own interest in the environment, and encouraged the pupils to pay more attention because the activity concerned them personally (see Burbules, 2004 for aspects of immersion in an experience such as interest, involvement, interaction). In addition, following pupils' interest and giving them the choice and control over their learning are also characteristics within the personal context of the Contextual Model of Learning in museums (Falk & Dierking, 2000). The role of choice and control is especially relevant for free-choice learning situations, but in this example as has been pointed out by Karen, it is as an element of an activity structured and led by an educator.

I noticed many inconsistencies during my interviews with Karen, such as her views on the trails. Although she did acknowledge that the trail during the third visit in 2006-2007 seemed to be repetition, she expressed a preference for the educator's more free-style trail that followed the pupils' interests more closely. However, during the first visit in the gardens, she had argued that the trail activity was not as successful because it was not focused tightly to the objective of the activity, using the senses to explore the plants. The lack of explicitness in Karen's responses can possibly be attributed to her avoidance of directly expressing her dissatisfaction. She also avoided admitting that some of the

problems during the visit occurred because of her lack of interest in the collaboration – and possibly a lack of interest in the gardens compared to other teachers – and her unwillingness to get involved in planning visits. On the other hand, Juliet, the Wakehurst educator, has also responsibility for the repetition of an activity that the pupils had experienced in a previous visit, because she did not check Wakehurst records to see what activities the pupils had done in previous visits. Neither did she discuss with other educators what they had taught those pupils on previous visits. That shows that the educator lacked organising skills which had an impact on the collaboration outcomes. I have already discussed how Kelly, another Wakehurst educator avoided making that same mistake. Although Wakehurst has the appropriate structure and resources that will support high quality collaboration with schools, it is up to the individuals who collaborate and their personal skills and experience to make the most of the opportunities.

Karen collaborated with a different educator each time and did not seem to develop a good relationship and match with any of them. She developed a relative negative stance towards the visits as she felt they were visiting the gardens too many times. However she kept visiting the gardens due to the commitment that the school has to the collaboration with Wakehurst which enables important educational objectives to be met. If I were to describe schematically the story of Karen's collaboration with Wakehurst I would draw the following loop (figure 6-1). Her collaboration retained a cyclical process but without any improvement. Karen did not seem to develop a significant increase in trust; rather, she felt she had to continue the collaboration because of the interorganisational commitment – the only indication of trust was expressed as a rationalisation for missing the planning meeting. It can also be said that Karen's process of collaboration went backwards as each visit seemed to further reinforce her dissatisfaction with the gardens. However, the collaboration should not be regarded as totally unsuccessful; the pupils' still learned from the activities and they did seem to enjoy most of the visit experiences. But the continuity of the collaboration appears to be determined by the commitment of the two organisations, the history of the organisations' collaboration rather than the teacher's willingness and enthusiasm to be part of this[19].

[19] Other factors that influence and determine school's and gardens' choice to collaborate will be explored in the next chapters (i.e. building individual relationships and organisations' interdependency).

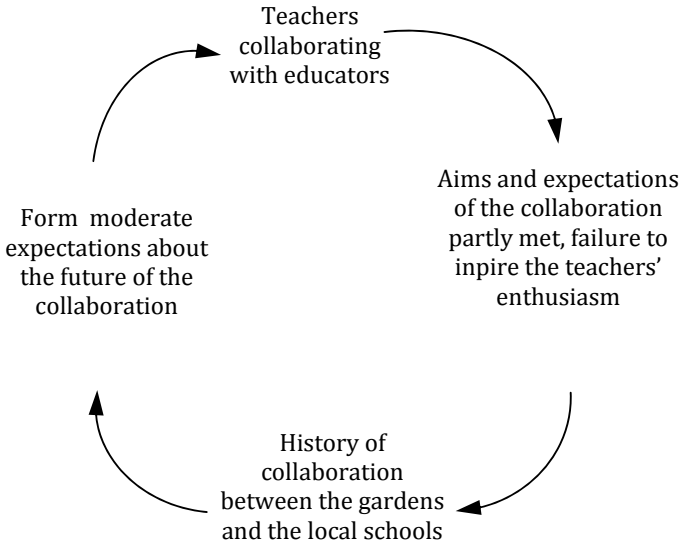

Figure 6-1 Collaboration Loop (I)

Other points should be raised in relation to Karen's collaboration with Wakehurst educators and her views on the visits to Wakehurst. Karen was a newly qualified teacher (this was her third year of teaching) and during interviews she expressed her concerns for health and safety when taking the pupils on outdoors activities; even if her class visits were to Wakehurst which can be regarded as a relatively very safe environment for outdoor education, she was the one responsible for the pupils' safety. Her lack of confidence in taking students into outdoor education settings can be justified by her lack of experience and her young age. The fact that her pupils were also very young (7&8 years old) might have further contributed to her health and safety concerns when taking them to a trip to Wakehurst. Karen remained eager to take the pupils for a trip to Wakehurst as long it was related to science. Because she was not so confident about teaching science, she valued going to Wakehurst for science teaching by the expert educators (see excerpt p.208). In addition, Karen being a newly qualified teacher possibly felt more pressured in relation to her teaching performance and devoted her time in school to preparation, hence, she did not have much time to devote for the planning meetings with the educators. Some newly qualified or inexperienced teachers can have anxieties and uncertainties about taking young people away from the familiarity of school context. However, not all novice teachers have this attitude. Other newly qualified

teachers, because of the way they have been trained, or their life experiences, may be more confident and eager to take their pupils to out of school educational visits. For instance, Esther who was also a newly qualified teacher at Cherry Tree Primary was much more enthusiastic about the school visits to Wakehurst. In Chapter 7, I describe Esther's collaboration with Kelly, and explain why her interactions with Wakehurst educators were much more successful than Karen's.

Amy's and Anna's story – enthusiasm

The second story comes from Oak Tree Primary. Yr6 class teacher Amy, in conjunction with the school music teacher Anna, organised a school visit to Wakehurst in 2006-2007. Although, as mentioned before (see Chapter 5, p. 181), there were some issues with the arrangements of the visit and especially booking the exact day, I would describe the collaboration as a success. Amy and Anna have collaborated in the past with Wakehurst, especially with educator Michelle, where the friendship of Michelle with Anna makes collaborating easier. This is a contrast to Karen's story, as noted above, where she collaborated with different educators every time she visited Wakehurst with her class which had a negative impact on the collaboration process and outcome. For the visit during 2006-2007, Anna and Michelle met for a face to face planning meeting. Even though they had collaborated in the past, and they knew very well the essentials of the collaboration, the planning meeting was still very detailed. As a result, the actual visit was tailor-made for the needs of the class and included a specially developed trail. The activities took place in the field studies centre, and also in the wetland area which usually does not happen for primary schools. The fact that Amy and Anna were both experienced teachers, and the pupils' age (Yr 6) also influenced the decision to organise the activities in the field studies centre and the wetland areas, and overcome any health and safety barriers that arose (see Rickinson *et al.*, 2004 for a consideration of the barriers to outdoor education).

The visit was also very well connected to class work on Habitats, and elements of the visit were used at school afterwards. That can be also attributed to Amy's long teaching experience and I would add, based on my observations of the class, her teaching talent as well. Amy created explicit links with the Wakehurst visit during her class teaching, and after the trip she build on the knowledge the pupils gained at Wakehurst and extended it with further outdoor activities in the school. She was also very confident in using the outdoor school spaces for her teaching. Comparing Amy's story with Karen's, teacher's

experience emerges as a factor that can influence the success of the collaboration between a school and Wakehurst. Generalisations should be made with caution, however, as experienced teachers may also have lost their enthusiasm for teaching, and relatively novice teachers may have life experiences and training that make them very competent professionals.

The theme of the visit was Habitats and Adaptations and it comprised a trail following the water course at Wakehurst, pond dipping, minibeast identification, a terrestrial minibeast hunt, and comparing habitats. Yr6 pupils had already sat their SAT exams and Amy wanted the visit to Wakehurst to put their science learning in real context, but also to be a fun experience as it was towards the end of the school year.

What was noticeable during and after the visit was the excitement of all those involved, the educator, parents, teachers and pupils. In the following excerpts the educator and the teacher explain how the visit went, and they also speak of the collaboration in a more general way.

> **Michelle:** (speaking about class 6) they are really a nice bunch of children… and very interested and it was the same with the helpers. Everybody was interested and that made a real big difference because they wanted to identify things as well. You know, those days are not just what we are doing, it depends on all sort of things doesn't it? Ehm, very much depends on the teachers and their helpers and their willingness you know, to take your ideas and develop them when you go back to school…And Anna is very very keen on creativity and so she's always keen to get out and do arty things and quite happy to quite happy to combine art and environmental things as well (Interview with Michelle, 5/6/2007).

> **Researcher:** and was there anything you would improve if you did that again?
> **Amy:** I can't think. Not really. It was a well paced day. It was just right. It worked well for the children it was very good actually.
> **Researcher:** could you say anything about the planning meeting although you weren't there?
> **Amy:** no Anna has to fill you in about that. But I wasn't worried about that because Michelle is always so good at that (laugh). And she knows what we know, what we can do.
> **Researcher:** and could you tell me two things that help this collaboration and two things that make difficult this collaboration?
> **Amy:** the one obvious thing is that Michelle is so enthusiastic and the way she teaches is worth going. You know we get a good lesson really, and you know it's going to be brilliant and so on ehm the facilities and the resources there are

> sensational so they are exactly what we want what we haven't got here (Interview with Amy, 27/6/2007).

The educator emphasised that the students were immersed in the experience in the gardens because it was interesting to them, and the experience was interactive with the students participating actively in the identification tasks (see Burbules, 2004). Michelle also commented on the adults' eagerness to participate in the activities which influenced pupils' participation. Falk & Dierking (2000) have included within-group sociocultural mediation as a factor that contributes to individual's learning in museums. This also applies in my research as it highlights the role of adult helpers in the activities that are led by the educator in the gardens and also facilitated by pupils, teacher, parents and volunteers who assist during the visit. In other school visits where the educators were not very pleased about how the visit went, they did mention issues with the adults' lack of participation and enthusiasm in the activities which had an impact on pupil participation and immersion in the experience.

Moreover, salient elements of the collaboration, as expressed in the words of both the Wakehurst educator and the school teacher, are trust and enthusiasm. Both elements are the result of the previous collaboration between Oak Tree Primary and Wakehurst. Having already had successful collaborations in the past, the teachers (both Anna and Amy) and educator Michelle had high expectations of the visit. As a result of very good communications they developed a detailed tailor-made plan for the visit, with elements of innovation which resulted in a successful visit. The good communication and a shared vision of partners were factors that characterised Michelle's collaboration with Anna and have been also reported in the literature as contributors to successful collaboration (Mattessich & Monsey, 2001; IMS, 1996). The fact that the specific teachers have successfully collaborated in the past was a very important factor, as they knew what to expect from each other and their enthusiasm and creativity were important characteristics that they had in common. Furthermore, Amy and Anna's collaboration with Michelle shows that it is important the teachers to collaborate with the same educator, and if possible, to share common characteristics and interests. All these elements were missing from Karen's collaboration with Wakehurst educators, and can also explain her dissatisfaction from the visits she organised for her class to Wakehurst. Figure 6-2 explains the way that the history of collaboration influences the future of collaboration between the school and the gardens.

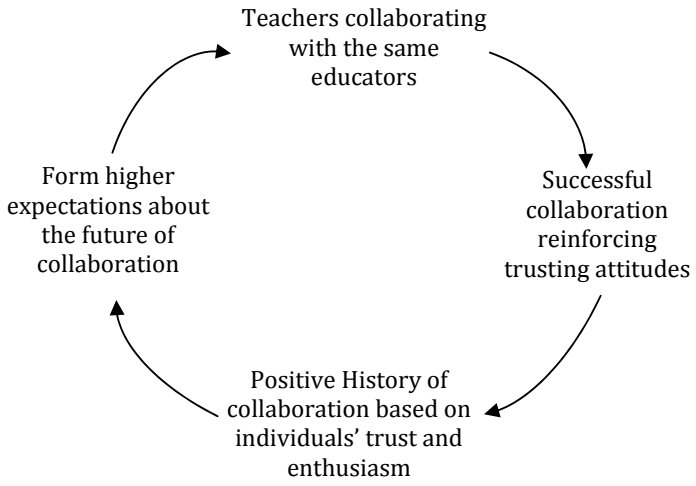

Figure 6-2 Collaboration Loop (II)

Mark's story – an unexpected turnout: from lack of interest to inspired enthusiasm

A very interesting example of how collaboration with a rather negative history can become more positive comes from Cherry Tree Primary. Mark, Cherry Tree Primary class 5 (Yr6 pupils) teacher, had been working at the school for four years and had already been on six school visits to Wakehurst. As Mark explained, he felt that the visits to Wakehurst were too regular and, in addition, because Wakehurst Place was so close, he did not appreciate it as much as he might. In addition, as has been mentioned in Karen's story, the decision to visit Wakehurst so regularly during 2006 – 2007 was taken at the end of the previous year, and was part of the school's policy, with the head teacher playing a significant part in taking that decision. Hence it wasn't Mark's own decision to visit Wakehurst so often, and, like Karen, he felt that he had to go, as he stated in one of his interviews – the interview excerpt follows.

> **Mark:** if we didn't go 3 times each year I might be more excited about going so if you asked me about going to London in the summer I would probably say oh yeah I really enjoyed this thing and the other. I suppose because it is just on our doorstep I don't really see it as a trip; I just see it as an extended classroom…The simple thing I suppose is you don't appreciate what's in your doorstep, you go away on holiday to the Lake district and you are more likely to marvel and wonder at the spectacle; I guess if you live around all the time a lot of it is wasted on you. My theory is that if we go there as much as we are going there perhaps some of

> the excitement of the day will wear off. But having said that children just love going out of school so
>
> **Researcher:** was there anything you didn't enjoy?
>
> **Mark:** I think sometimes some activities go too long. I think a lot of things we could do it half the time…behaviour? I didn't think we were particularly good this time. Normally they are excellent. Normally they are absolutely superb. Last year, my class was fantastic. This year because they are a chatty bunch they are not naughty they are just chatty I would say that perhaps behaviour this year wasn't as good as I would expect. It wasn't bad but I've seen better….I feel we are just like any school that goes now. Whereas when we first went we were definitely the local school. The people treat us as such. It's not a criticism I understand why that is because they are much more perhaps professional in their approach to what they are doing but with that you lose some of the friendliness, not friendliness you lose some of the informality (Interview with Mark, 12/10/2006).

Despite the fact that Mark had organised the same visit previously, but with a different educator, he was not happy about how the visit went in autumn 2006. This was partly because of the discipline of the pupils (a chatty class – Mark had just become the teacher of those pupils and it was the first term of the school year), and also, as he argued, the visit was not good enough to keep the pupils' interest. The themes of the visit were A Place to Grow, and How Plants Adapt, and comprised the activities: a place to grow, design a plant at the Millennium Seed Bank parterres, and a trail about plant adaptation. Mark was not pleased with the art activity, design a plant, as he did not see the value of the learning objectives of the activity. The whole visit was related to the science curriculum. During an interview with the pupils I found that they did learn what was intended.

Mark was an experienced teacher with 12 years of experience, and he was confident in taking pupils outdoors, for example, during the summer term, in collaboration with two other school teachers he organised, a non-assisted visit to Wakehurst on orienteering. Thus his negative stance to visits to Wakehurst cannot be attributed to his lack of experience or confidence with taking pupils outdoors, as in Karen's story. One of the reasons he lost enthusiasm for the visits to Wakehurst was that he had been so many times to the garden with the school, and had established a feeling of familiarity with the place, to the degree that the trips for him did not promise any excitement anymore. Burbules (2004) has argued that an experience, even if it is repeated, can still be interesting enough and the individuals can be immersed in it, as long as the experience allows individuals to discover new aspects every time. Mark argued for the need for

experiences outdoors to have the element of novelty, and this he did not find at Wakehurst anymore. However, he compared his case with Joyce's (another teacher whose story will be explored in Chapter 7) and he concluded that teachers' attitudes to school visits are a matter of personal interests as well. Joyce has also been on many school trips to Wakehurst, but she still keeps her enthusiasm for the visits which are close to her environmental interests, while Mark explained that he is more interested in PE rather than environmental issues. In addition, Mark's negative attitude to the regularity of the trips can be justified by the fact that he teaches Yr6 pupils who sit SATs exams, so he is more pressured than some other teachers in the school to achieve pupil success in the exams. Hence, the fact that a trip to Wakehurst has lost his novelty for the teacher, his personal preferences, and the exams pressures all contributed to the collaboration.

Mark's negative stance in the autumn visit was overturned during the visit in the spring. Mark did not do a planning meeting, only having a quick contact with the educator who told me that she got the impression that he was not enthusiastic about the visit. That was not helped by the fact that the visit could not be linked with the pupils' classroom topic, and in the end, the focus became revision for plant science which would help the pupils in preparation for SATs. The activities planned for the revision day were healthy/unhealthy plants and flower structure, a trail on the lifecycle, and seed dispersal and germination. The educator who implemented the visit usually teaches secondary pupils but as the initial educator, Heather, was sick, Margaret was arranged to replace her. Margaret is a very efficient and knowledgeable educator, and she usually prefers teaching older pupils. Mark, at the end of the visit, was very happy with how it went. He especially appreciated the educator's abilities, her pedagogy, and her way of keeping the pupils' discipline. As a result, he said that for his next visit to Wakehurst, he would ask for the same educator. Margaret also noticed the change in Mark's attitude at the end of the visit. In respect of that visit, however, it should be noted that the trail during the visit was not so successful because of the specific season (early spring when not many plants) were in flower so that the pupils could not observe a wide variety of plant features. Additionally, the pupils expressed some disappointment at doing most of the activities indoors. Mark, at the end of 2006-2007, was looking at the history of collaboration of his colleague Joyce with Michelle and the creative activities she planned, and he was considering attempting something similar for the next year. During the interview Mark explained his view on how his most recent visit went:

> **Researcher:** I remember last time you were a little bit concerned about going again three times to Wakehurst so how did you manage this time?

> **Mark:** well this time it was fine because what I did was, I treated it as it was a revision session. All the 11 years old do a science test in May and a big chunk of that science test is life processes which is like biology but for smaller kids and so what I did was, I chose activities that we would have done in the classroom but we were able to do better at Wakehurst. For example the first thing we did we looked at samples of plants in controlled conditions; we could do it in the classroom but it would take a lot of effort to prepare a control plant, and then four different plants in different conditions; they did that at Wakehurst as a part of a course, so that whole thing was made easier by going to Wakehurst. We needed to do that so why not going to Wakehurst and having it done properly. So the day itself in the morning it was very worthwhile, I am not totally sure they got much out of the trail in the afternoon. It was after the lunch, after playtime, they worked very hard in the morning. Perhaps the afternoon should have been something a bit more sort of free. The educator was very good as well; she was great. She is the best we ever had. She just told them off (the pupils) didn't she? And it made such a difference. She just had the control. I am going to request her next time again.
>
> **Researcher:** do you think if this visit wasn't planned you would go anyway or you would go another time?
>
> **Mark:** we have to go. We have to go once a term (Interview with Mark, 15/3/2007).

Margaret, the educator, also confirmed how converted Mark became by the end of the visit about his view on the value of the visit to Wakehurst:

> **Researcher:** I am a little bit concerned about what you said about the teacher who didn't want to come here and that's quite, not weird but you know if the teacher doesn't want to come why does he come?
>
> **Margaret:** Because the school had booked it already but he was totally converted by the end; he said several times how it really works and pulled everything together so I think he will be a new convert in the future. I think it's because doing plant things at the moment didn't fit with his timetable of how the year was going to run. He didn't see how it would fit in with his plan but having done it today he thinks that a lot of information, a lot of revision, so he said they are going to do something else for a couple of weeks and then he will come back to see how much they remember on the plants. So I think he went away very converted (Interview with Margaret, 6/3/2007).

Although in the past Mark had adopted a negative stance towards the collaboration with Wakehurst, feeling that he had to go, and hence did not get involved with the planning meetings, because of the spring visit which he found very worthwhile, and the educator

helpful, he changed his attitude and started considering the future of the collaboration more positively. Mark's appreciation of the visit with Margaret should be attributed also to the fact that Margaret was a very experienced educator, with many years of teaching biology in schools and in the gardens, and her subject knowledge and teaching techniques were exemplary and appropriate. In contrast, Kelly, the educator who led the autumn term visit, had some language teaching experience in school, and had only just started teaching in the gardens that year[20]. Mark appreciated the spring term visit much more as it proved very useful for his teaching in the school, and especially contributed to meeting his targets, i.e. the students achieving well in the SATs exams. In that case, the factor that emerges is members seeing the collaboration as in their professional self interest (Mattessich & Monsey, 1992; IMS, 1996). Mark emphasised a neo-experiential perspective of experience according to which the 'experience becomes something technical and instrumental. It is tightly bounded (in time and space), rationally constructed, and efficiently controlled' (Roberts, 2008, p.29) and its main purpose is fulfilling curriculum content. Having said that, he did reflect on how the spring visit went and suggested that the experience should have been more balanced in terms of being structured and very focused in the first half with the classroom activities, and then it should have been less structured in the second half so that the pupils' immersion would have been sustained.

It seems that Mark's previous collaboration was based more on his school's history of collaboration with Wakehurst and its commitment to it, rather than on his personal willingness to visit Wakehurst which had been minimised because of his familiarity with the place, and the subsequent loss of the novelty of the experience. Mark's previous collaboration with Wakehurst can be depicted in the first loop (figure 6-1). Mark's change to a more positive attitude to the collaboration can be illustrated as a passing from the first loop of the collaboration to the second (combination of figure 6-1 and 6-2). The passing from the first loop to the second can be explained by a successful collaboration that transforms the teachers' enthusiasm and can be achieved usually when the educator and the teacher have common elements such as favoured pedagogies, style of keeping discipline, creativity etc. In Mark's case the teacher that changed his attitude to the collaboration was Margaret. In contrast, Karen, whose story has been analysed earlier, did not find an educator with whom she 'matched' during her interactions with different educators, and therefore her collaboration remained within Collaboration Loop (I).

[20] however, Kelly had a successful collaboration with Esther, a Cherry Tree Primary teacher, an example that will be explained in Chapter 7.

Further elaboration of what a good 'match'[21] of individuals in a collaboration means, and the benefits from that 'match' will follow in the next chapter. The combination of the two loops is shown in figure 6-3.

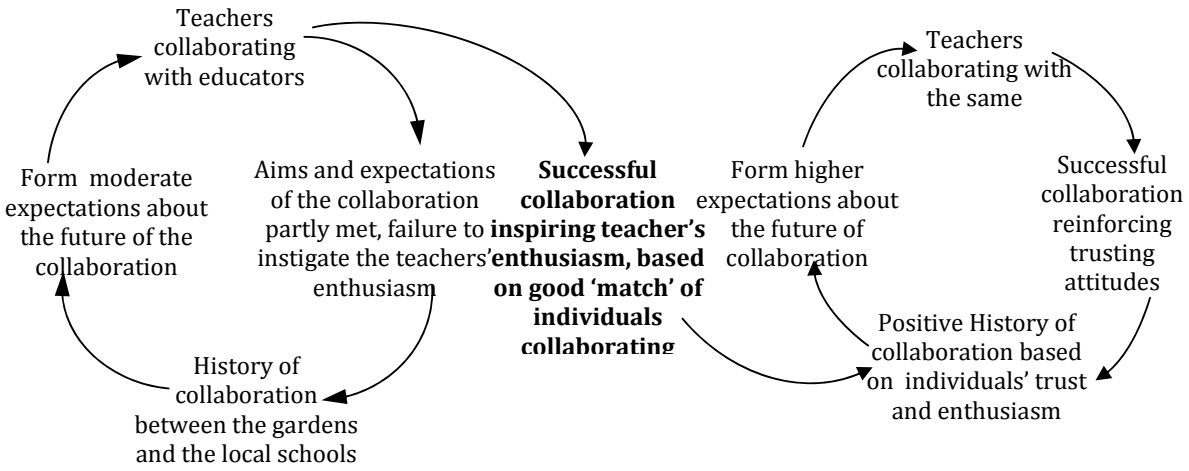

Figure 6-3 Collaboration Double Loop

Overview of the *Collaboration Double Loop* model and how it links to the literature.

This *Collaboration Double Loop* is a model emerging from the data of my research in order to explain the interactions of botanic gardens and schools in relation to their history of collaboration. Concepts that are inherently linked in the loop are trust, enthusiasm, expectations, and individual interactions. Summarising the stories that have been presented above in relation to the double loop, I am arguing that the history of collaboration may contribute to the success of collaboration as long as it has been successful in the past. Such examples are the collaboration of Michelle (Wakehurst educator) with Anna and Amy (Oak Tree Primary school), and Michelle with Joyce (Cherry Tree Primary school – whose story will be told in the next chapter). In cases where the collaboration was not as successful, there is always opportunity for change as illustrated in Mark's story. A negative history that includes a lack of enthusiasm may be

[21] Although 'match' is not an academic terminology, I will use it as it represents in the most appropriate way the phenomenon of the educator pairing up with a teacher with whom they share common. characteristics as personalities, preferences and even values sometimes, and learning and teaching theories. A detailed explanation of what a good 'match' entails will be given in 7.2. Joyce's relationship with Heather and Michelle.

overturned especially when the teacher finds an educator with which they feel they match through common elements. That point is depicted by the double loop model and also highlights how a negative history of collaboration or a negative climate can be overturned and result in successful collaboration which will in turn become a positive history for future collaborations. Moreover, the transition from the first loop to the second is characterised by a change in values as both educator's and teacher's appreciation of the collaboration rises. For instance, Esther, the Cherry Tree Primary reception class teacher went to Wakehurst for two combined visits of the reception class with class 1 in 2006 - 2007. In her 3rd class visit to Wakehurst in 2006-2007 Esther collaborated with Kelly and they developed a tailor-made programme specific to her class needs. Esther's appreciation of the collaboration with Wakehurst had increased significantly by the end of that school year, and she was contemplating asking to work with the same educator for the visits in the following year. When the collaboration is not as successful, as in Karen's story, the collaboration will likely still continue owing to the institutions' history of collaboration. Karen in particular did not make a close connection with any single educator but made the point that she would have preferred continuity by having the same educator. The continuation of the collaboration due to the institutions' history of collaboration implies also that the collaboration is driven by the head teacher's enthusiasm and the politics between the gardens and the schools due to their geographical closeness.

Looking at the collaborations that are illustrated in the first loop of figure 6-3, such as Karen's collaboration with Kelly, Margaret and Juliet, or Mark's collaboration with Kelly, it can be said that these were driven by the school's commitment to the collaboration, led by the head teacher, rather than by the teachers' personal choices. The literature illustrates important factors for the success of a collaboration including: 'multiple layers of decision making' (enabling all the members to participate in decisions), members' commitment, ownership and seeing collaboration in their self interest (Mattessich & Monsey, 1992; IMS, 1996). The collaborations that remain within the first loop of figure 6-3 lack any of the above factors, and the teachers felt negatively, as if they were forced to collaborate. This attitude became evident to the educators, and created a rather negative collaborative atmosphere. The main argument that emerges is that it not only is important for interorganisational collaborations to have the heads of the organisations' support, but it is also equally important that collaborations not be forced upon individuals as they will not interact as effectively, and the outcomes will likely not be as successful. Decision-making processes should be on different levels ranging from the head to the employees of the organisations, and it follows that teachers should have

some devolved responsibility to make decisions how to make the most appropriate use of Wakehurst. However, at the end of the 2006-2007 school year, during a teachers' meeting at Cherry Tree Primary, where they reviewed the collaboration with Wakehurst, they decided to have fewer visits the following year, taking into consideration that some teachers felt that they were visiting the gardens too often. This is evidence of devolved decision-making.

The *Collaboration Double Loop* model presented here is similar to that theorised by Argyris & Schön (1996, pp.20-21) single- and double-loop learning concepts.

> Single-loop learning is instrumental learning that changes strategies of action, or assumptions underlying strategies in ways that leave the values of a theory of action unchanged…Single-loop learning is concerned primarily with effectiveness: how best to achieve existing goals and objectives keeping organisational performance within the range specified by existing values and norms (ibid, p. 22). Double-loop learning is learning that results in a change in the values of theory-in-use, as well as in its strategies and assumptions.

Looking at the *Collaboration Double Loop* model presented here, when a teacher – educator 'match' occurs, and the collaboration passes from the first loop to the second, that process involves double-loop learning. The educator and the teacher do not only improve the effectiveness of the collaboration, but they challenge the process and assumption behind the collaboration (a change in values). The collaboration of the school and Wakehurst passes from the organisational to the personal level and becomes more flexible, innovative, and creative. For instance, when Amy and Anna collaborated with Michelle they did not plan the visit based on the set activities that were part of the learning programme. Rather, by working together, they developed new activities that would meet their needs linking to what the pupils were learning at school. In this way, the visit is not only tailor-made to the topic the students study at school, but also school activities are planed around the visit so that the visit becomes inherently linked to the school curriculum as recommended by Dillon *et al.* (2005). Furthermore, the teachers and the educator knew that they could be more adventurous on the visit activities. For example, for Oak Tree Primary class 6 summer visit to Wakehurst the activities took place in the wetland area which was not usually used for primary school visits.

Over a period of more than five years, the local schools have established a regular collaboration with Wakehurst acknowledging the value of what the gardens can offer to them. Based on that history, each time a teacher and educator work together to organise a

school visit they already have expectations about the visit. If the visit outcomes are not satisfactory and the teacher does not become enthusiastic, that does not mean that the collaboration stops since the organisations have established a pattern of visits, and the head teacher's continuing commitment to the collaboration guarantee its continuation. However, in this case, the enthusiasm of the teacher for the next visit will not be high. There is evidence in this research that when a successful collaboration is achieved the teacher's enthusiasm is ignited and usually that is due to a good match between the educator and the teacher. A successful collaboration becomes a positive history background and there is evidence that there is then a tendency for the same teacher and educator to collaborate again with the expectations for the next time set higher. Further successful collaboration reinforces the trusting relationship between the specific individuals and adds to the positive history of the collaboration[22]. The transition from the first loop to the second, because of the change in values due to the match of a teacher and educator, can be seen as a means of positive change. More longitudinal research on the collaboration of Wakehurst and the local schools may give evidence on whether and how the loops may change taking into account Huxham & Vangen's (2005) suggestion that constant nurturing of activities are essential to maintain trust and success in the collaboration. Such longitudinal research would further explore the loops and how they change over time. The model of the *Collaboration Double Loop* presented here is used to explain the collaborations in relation to the visits of the local schools to Wakehurst during 2006-2007. The model refers to the school visits that share a specific collaboration and are the major and regular activity that links the gardens and the schools every year. Applying the model in other botanic gardens and their close collaboration with local schools could further test its usefulness.

This linkage of the history of collaboration with trust and expectations has also been suggested by Huxham & Vangen:

> It is necessary to be able to form expectations at the outset of the collaboration and these expectations are commonly based either on common past satisfactory experiences or partners' reputation and may be articulated in formal agreements (Huxham & Vangen, 2005, p.154).

Furthermore, Huxham & Vangen (2005, p.154) argue that trust building is

[22] As a reminder, history of the collaboration entails an account of past events and developments, including an account of previously established relationships, and how these have established patterns of behaviour in a collaboration that influence the present and future of the collaboration.

a cyclic process within which positive outcomes form the basis for trust development. With each consecutive positive outcome trust builds upon itself incrementally, over time, in a virtuous cycle. Each time partners act together they take a risk and form expectations about the intended outcome and the way others will contribute to achieving it. Each time an outcome meets expectations, trusting attitudes are reinforced. The outcome becomes part of the history of the relationship so increasing the chance that partners will have positive expectations about joint action in the future. The increased trust reduces the sense of risk for these future actions.

This argument is depicted in a trust building loop (figure 6-4). Huxham & Vangen (2005) suggest that trust building is as dynamic as collaboration, hence, carefully built trusting relationships may disappear at any point. In order to maintain the cyclical trust building process, continuous nurturing activities are needed and trust is often considered as a precondition for successful collaboration. The history of collaboration may form the basis for building and nurturing trust as figure 6-4 suggests. In particular when a history of collaboration exists it establishes trust between the participants in order to collaborate in future.

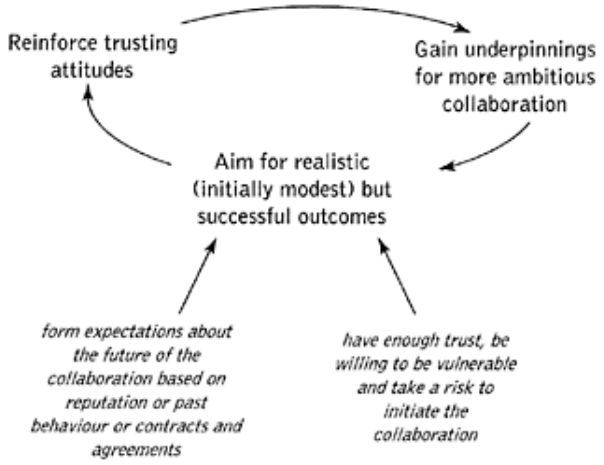

Figure 6-4 The trust-building loop (Huxham & Vangen, 2005, p.68).

Huxham & Vangen's (2005) model of how trust influences the success of collaboration shares many common points with the way I looked at the cases and especially at how history of collaboration may have influenced the building of trust and with what consequences. With the *Collaboration Double Loop* I am suggesting a pattern of how botanic gardens and the local schools collaborate and especially how the individuals within them interact. My model initially informed by Huxham & Vangen's (2005) trust building loop, expands to include the educator – teacher 'match' as an important element

and suggests a progression of the collaboration from loop (I) to loop (II) with respective increases in the success and outcomes of collaboration such as in developing more quality educational experiences for students. I should acknowledge that like all 'models' this is an attempt to explain one aspect of the collaboration which does simplify in a way the multi-complex expressions of the collaboration.

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From the outset of Chapter 6, examples from my research have illustrated that a history of collaboration may create the conditions for the organisations to continue and enhance their collaboration in the future. Wakehurst will ask schools, where there is a history of interactions, to support any special projects that require school involvement. In other ways, when teachers visit the gardens again and ask for activities they have done in the past they may also propose improvements that will be incorporated as modifications of the list of activities offered to other schools as well. In addition, owing to the history of collaboration, teachers know what to expect and trust the collaboration's outcomes. In some instances, a history of issues such as that the confidence the teachers have in organising the school visits may become a negative factor when the teachers decide to skip important procedures such as the planning meeting.

Pupils have developed a familiarity with Wakehurst not only because of the history of collaboration between their school and the gardens, but also because of their personal history in the gardens which they visit with their families. Pupils anticipate learning in a different way when they visit Wakehurst and see places and aspects of the gardens that they had not seen before. Factors that participants reported as influencing pupils' learning have been the physical context, pupils' expectations and motivations, choice and control, and interest, all of which have also been reported in the free-choice learning literature. An interactive perspective of the experience held by the participants became apparent in this chapter.

I have developed the *Collaboration Double Loop* model to explain the collaboration between educators at Wakehurst and teachers in three local schools. The model explains that the history of organisations' collaboration may secure the future of the collaboration and dictate the initial expectations of the participants i.e. because schools and the gardens have collaborated in the past they will continue to collaborate in the future and the teachers and educators will hold certain expectations regarding the success of the collaboration. However, the success of collaboration is reinforced when the teachers match with particular educators, and experience successful collaborations which create

higher expectations and enthusiasm to improve the collaboration. Other factors that influence the collaboration include the organisations' proximity, clearly defined roles and responsibilities, ease of communication, mutual respect and understanding, organisation' leadership, partners' commitment, partners seeing the collaboration in their professional self-interest, and members of the organisations (i.e. teachers and educators) sharing a stake in the process and outcome of the collaboration. Furthermore, the phenomenon of teachers matching with particular educators with whom they develop a more constant relationship has been introduced in this chapter and will be further explored in Chapter 7. This next chapter focuses on the success of collaboration achieved, with multi-benefits, when the collaboration between the organisations moves to the development of strong individual relationships between members across the organisations.

Chapter 7. Individual collaboration

⌘ Chapter Introduction

While describing how its history can influence the future of collaboration, I have previously explained the importance of building individual relationships. The *Collaboration Double Loop* in Chapter 6 illustrated how organisations' collaboration progresses when individuals, i.e. the educator and teacher, 'match'. The first loop represented how the continuity of collaboration was based on the *organisations*' history of collaboration, and the second loop represented continuity based on *individuals*' history. However, individual collaboration is worth exploring in more detail in order to explain why it is important for organisations to work together, to encourage and give motivation for individual relationships to flourish. Chapter 7 aims to build on the *Collaboration Double Loop* by focusing on what individual 'matching' means, and whether different levels of match exist. I begin by explaining how, during the fieldwork, the importance of individual interactions across the organisations emerged, and from there I tell the story of the collaboration between Joyce (Cherry Tree Primary teacher) and Heather and Michelle (Wakehurst educators). That story is the centrepiece of my research, and the best example of what individual collaboration can achieve. It will also become the benchmark with which I will compare other individuals' stories. In order to enable this comparison, stories that have been already told in Chapter 6 will be re-examined in a more in-depth way. The result of that comparison will be the *Individual Collaboration Continuum*, a model explaining collaboration success accruing from individual interactions. Following this, I will counterpoint the model with similar models proposed by other research. The chapter finishes by discussing the issue of what happens to the collaboration if members of the organisations change.

The models that describe the interorganisational collaboration and the individual interactions constitute part of the main findings of this research. The data that resulted in the development of the models will also signpost a variety of factors that influence the collaboration and have been identified in the literature. Members of the organisations, their characteristics and background will be also examined. While looking at these collaborations, issues related to how pupils' environmental learning experiences in the gardens are conceptualised and influenced, and how pupils' learning experiences in the gardens may be linked with their school experiences, will be also explored.

7.1. Individual collaboration, an emerging theme during the fieldwork

My beliefs on interorganisational collaboration based on the **development of individual relationships** changed during my fieldwork, developing into a picture that was a different way of thinking about collaboration. The following research diary excerpt illustrates how my thinking evolved, based on combining different stories of collaboration I either observed, or which were reported by the participants of my research.

> I went at 7.30 am to interview Richard (head of the arboretum unit). He told me the history of the Wild View project and his communication with the schools. He said that he expects that some schools will be enthusiastic, but some others won't. It's up to them. Wakehurst is offering this, but they can't force them. The most important thing from this interview was the point about collaboration; that the collaborations depend on enthusiastic people. For example he mentioned the collaboration he is initiating with the school his son is going to. I thought about Michelle (educator) mentioning the enthusiastic head teacher of Turner's Hill, and how she helped the school to develop connections with a local farm, and maybe that's why they may not visit so often Wakehurst. Michelle did things with Turner's Hill because her children went to that school. Also, with Cherry Tree Primary, the most important collaboration is Michelle's with Joyce (teacher) as they do the same things every year, and build on them as well. Another school was encouraged to do the activity of shelter building (activity co-created by Michelle and Joyce) as Joyce recommended to her friend who is teaching in that school. Possibly, this is the best collaboration example between Cherry Tree Primary and Wakehurst, which is between people and not organisations, but the organisations provide the base to build the collaboration. So it is like building a hypothesis about collaboration: it goes down to people in the end of the day (Research diary, 21/3/2007).

My research began by looking at how Wakehurst collaborates closely with local primary schools, and how pupils may link their environmental learning experiences in school and at Wakehurst. I deliberately chose the schools that the head of Wakehurst learning programme had pointed out as having a close relationship developed over the years. It was during the Spring term, the second phase of my fieldwork, that stories of success started to emerge clearly, based not so much on how organisations collaborated, but on how specific individuals developed closer relationships, where higher levels of involvement between the individuals would create more innovative, experimental

learning opportunities for the pupils. My fieldwork focused gradually on how participants' relationships developed and through observations, informal discussions, and interviews, I gathered enough data to explain and explore the phenomena. I will build my argument here by showing how individuals from the local schools and Wakehurst collaborated. I will also provide evidence of how their mode of collaboration inspired other people, and how I came to perceive individual collaboration as a decisive factor for the success of collaboration between the organisations. In addition, when describing the cases, I refer to the importance of informal links between individuals that contribute to the organisations' relationship (see Chapter 5, description of cases). Informal links also exist in the individual collaboration, but what is more important in building and developing a collaboration is a more structured and sustaining manner of interaction and involvement.

7.2. Stories of collaboration as a 'personal thing'

Joyce's relationship with Heather and Michelle

I first got to know about individual collaborations at the beginning of the fieldwork when I noticed that Joyce was the only teacher from Cherry Tree Primary who had requested specific educators (Michelle and Heather) when the school booked the visits to Wakehurst. In the following excerpt, Joyce justifies her choice:

> **Joyce:** Some of them (school visits) are linked to what we are doing in the class with science; my class has done some special ones with Wakehurst. They've been very accommodating, and they've done additional things…I've got to commend them to be honest…you can see that they (visits to Wakehurst) are integral with our unit of work, that we are doing here; they fit in because I specifically requested the same people again because they know exactly what I want, rather than have someone else come along (Discussion with Joyce, 12/7/2006).

Factors that contribute to the success of collaboration, pointed out by Joyce, are that the gardens' match the school's needs to the activities they offer in the gardens, and that this is possible because she chooses specific educators who understand exactly what is needed. Joyce emphasised that the visit is an important part of the class work. This is in contrast to examples of collaboration in Chapter 6 that had not been a great success where the teachers argued that the visit could not be linked with the pupils unit of work at

school. These teachers said that they had had different educators each time they visited Wakehurst, and that the educator did not necessarily understand what they wanted. They also complained of unhelpful repetition.

❖ Joyce & Heather

During my fieldwork I investigated how Joyce interacted with Heather for the second time (first time was in 2005-2006) for a visit related to WWII, including activities on food miles, Wakehurst during WWII, and waste management and recycling and reusing materials at Wakehurst. The visit was tailor-made to a WWII topic studied at school, linked with subjects such as history, science, health education and environment/sustainability issues. It was the second time Joyce had a visit on this topic with the same educator, so she decided not to have a face to face planning meeting to prepare the visit. However, she had a planning meeting with Heather on the phone, discussing ways to improve the visit, and especially requesting to change the focus of the activity on waste management practices at Wakehurst from recycling (focus of the previous visit) to reusing materials. Heather described to me what the pupils were supposed to learn during the visit, and the way the activities were very well linked together, and co-ordinated with the topic the pupils were studying at school.

> **Heather:** because the pupils live in Ardingly and Wakehurst Place is close, they learned that people at Wakehurst Place were also involved in the War time with the soldiers that were here, and important work was going on, on site, here in the underground bunker; the food miles draw their attention to the difference between in the War time where food had to be grown at home, and now when they can get it from all over the world, but also made them think, should they be getting it from everywhere? Should they be encouraging the families to go for more locally grown food because of the environmental impact? And the recycling again, it was reinforcing the idea of what happened during the War time that people are trying to do again now, recycle and reuse, so I think it linked very well with what they had been doing. It was sort of bringing together what they've been doing and linking it to the present, really (Interview with Heather, 21/10/2006).

The interesting aspect of that particular activity is not only that it was tailor-made for the specific class, but also that the content focusing on Wakehurst during WWII has particular value, particularly for the local schools who may be more interested in the history of their area. The interview with Heather, in which she explained the learning objectives of the visit, demonstrates how coherent and well thought through the visit was,

linking past and present through practices that were adopted in the past but can be still meaningful now, even if the context is now different (e.g. the recycling activity and food miles). It also linked the gardens now with their past, and integrated the visit with the class topic at school. To achieve all these links successfully required that educator and teacher work very well together, each bringing their expert knowledge and skills into the collaboration.

Rickinson *et al.*'s (2009) lens[23] which looks at/for issues to do with relevance for understanding environmental learning is useful for interpreting the environmental learning experiences that Joyce and Heather developed together. Heather and Joyce paid particular attention to making the activities relevant to the pupils. Relevance here had different aspects. The experiences were relevant to the curriculum context (e.g. links with history), relevant to pupils' lives in the local community (e.g. links with the local history of their community in WWII), and relevant to their everyday life (e.g. family environmental behaviour including recycling, and where the food they eat comes from). Joyce and Heather developed the visit based on an interactive perspective of the experience (Roberts, 2008) in which what matters is that experience in the gardens is linked to what the students are learning at school, their lives in the local community and their family life. The continuity of the experience was achieved between spaces (e.g. school and the gardens environment), and activities (e.g. recycling at home and school, and recycling at Wakehurst).

Furthermore, the pupils' experience during that visit had different aspects which contributed to their learning: i) the experience was interesting as the pupils were able to see Wakehurst from a different point of view, as a historical place which they had not considered before; ii) the experience engaged pupils' imagination as they were fascinated by the educator's WWII story about the underground bunker at Wakehurst which they then used to make their drawings of how the site looked like during that period iii) the experience was involving as the pupils felt it concerned them, it was linked with their present family life; and iv) the experience was interactive in the sense that it not only provided pupils with opportunities to participate, intellectually with their responses and by completing tasks, but also through embodied action as they moved in the gardens during the activities e.g. to explore the recycled materials used in the gardens. See Burbules (2004) for more details on aspects of immersion in an experience, which I

[23] Rickinson *et al.* (2009, p.33) introduced the notion of a lens as a 'conceptual device which can be used to understand environmental learning in qualitatively different ways'. For a discussion of Rickinson *et al.*'s key concept of lenses see section 3.8.6. p.77.

discuss in section 3.7 p.66. The pupils enjoyed most of the visit, however, they did report some dissatisfaction because the activity on food miles took place indoors. Further analysis on their views on that indoor experience during the visit will be presented in section 8.2.4.

Joyce and Heather provided garden experiences that engaged with, and were relevant to pupils' experiences in school and the local community which was eased because they had developed a professional relationship having collaborated in the past. Joyce trusted what Heather could deliver as an educator and what they could achieve by working together, and she requested her again for her next visit on the same topic. The analysis of pupils' learning experiences also shows what an educator and a teacher can achieve when they work closely together. The good communication established during the planning process, and their common beliefs about how pupils learn contributed to developing and improving the visit's activities.

- **Joyce & Michelle**

The next two visits of class 4 involved Joyce's collaboration with Michelle. Joyce had stated her preference for Michelle and said how much she enjoys working with her. The class visit during the spring included survival skills and shelter building, linked to the subjects of English, design and technology, geography and science. The programme for the visit was initially developed and implemented in the previous year, and needed a large involvement from the educator who read the book 'Wolf Brother' that the class was studying in school. The visit, which was designed around the book, allowed the pupils to investigate what would happen if modern people had to survive in nature. The activity required that the educator collaborate with the arboretum unit that provided the materials for shelter building and also helped during the visit. The second part of the visit entailed a simulation of rainforest sounds by playing instruments made of natural materials found at Wakehurst. During the year of my study, Joyce once again did not have a face to face planning meeting. However, she discussed with Michelle on the phone how the visit went the previous year, and they decided on changes and improvements. In particular, they changed the session on rainforest music, as they had both observed that last time the pupils were too tired after shelter building to participate in a different kind of workshop. Michelle then developed another activity tailor-made to the class's needs, and on the same theme with the first activity: animal tracking, and survival skills such as estimating distances and finding directions. Michelle collaborated with Richard from the arboretum unit to develop the activity on animal tracking. The visit was replicated for another local

school, Sycamore Tree Primary, as Joyce recommend it to a teacher friend there. In addition, the animal tracking activity which was developed for Cherry Tree Primary class 4 was also used during the Oak Tree Yr6 pupils' visit that same year. It is evident that Michelle's collaboration with Joyce contributed to the further enrichment of Wakehurst's learning programme, and also encouraged collaboration of the learning programme with other departments within the gardens and collaboration with other schools. Hence the collaboration benefits are multifaceted.

Another element of the collaboration is Joyce's enthusiasm for organising the visit, and valuing the visit as a special, fun, day for herself as well.

> **Joyce:** For me the shelter building took place very deliberately on my birthday; even for me, the teacher, there was an ulterior enjoyment factor, desire, to have from the day (Interview with Joyce, 25/5/2007).

At the end of the lunch break on the day of the visits, Joyce had her birthday cake and other sweets shared with her class and the adult participants. The literature (IMS, 1996) supports this idea that when partners see the collaboration as of professional and personal benefit, it is more likely to be successful. Joyce's self interest here included not only that she valued the visit because it contributed to her classroom teaching, but also because the visit would give her a valuable personal experience which is another incentive to visit the gardens again.

In summer term Michelle again worked with Joyce on a visit on the topic of Rainforests that the class was studying at school. Activities such as an introduction on the rainforest, rainforest music, and trees mythologies were linked with the subjects of English, geography, religious education, music, and drama. As it was towards the end of the school year, the visit had a high element of fun. Joyce had a detailed meeting on the phone with Michelle, during which they discussed what she was doing in class, ideas she had for visit activities, and then Joyce and Michelle by complementing each other's ideas came up with new activities for the visit, and agreed on the schedule of the day. An illustration of how enthusiastic, involved and complementing of each other Joyce and Michelle are when they work together is how they developed the activity based on tree mythologies, during which the pupils dressed up using fancy dress clothes brought from Michelle's family collection, and then they created short plays and enacted them, based on some facts and stories Michelle told them during a trail at Wakehurst. Joyce described her wider learning objectives for the visit:

> **Joyce:** Obviously it wasn't science related. I wanted to do something on tree mythology so that's going to be more literacy related, and that's what it was. It was literacy, it covered my speaking and listening goals, it got them involved, and I actually quite liked the fact that it was so wacky, cause it was creative and fun. Ultimately there are lots of times when you come and think that you are looking for the learning benefit, but there are learning benefits that go beyond the simple 'we tick this off' our learning list; because speaking and listening, and joining in and participating, and the acting out and the drama are a path for developing confidence; and this term is our drama term, so we did our school play yesterday, so that's all part of being confident, and being ready to act out. And some of them may have been shy until they put their costumes on, and I think the costumes were rather wacky; walking around with all of them dressed up in wonderful outfits (Interview with Joyce, 25/5/2007).

Joyce emphasised the subject related links of the visit, but also the benefits of the outdoor education experiences for the pupils' personal development. Joyce is aware of the various benefits that outdoor education has for the pupils, and an indication of how she values outdoor education is that she is highly involved in the development of the activities at Wakehurst. This excerpt illustrates something of Joyce's theory of learning, i.e. that learning is creative and fun, and that developing communication skills is important as is building confidence. Other teachers in my research, such as Karen or Mark, only talked about linking learning in the gardens to curriculum content. Joyce's perspective on what the outdoor environmental experiences are for in the gardens, is also congruent with the 'Learning Outside the Classroom Manifesto' (DfES, 2006a, p.9) objective to 'provide a range of experiences that help develop key life skills, including personal, learning, enquiry and thinking skills'. Moreover, Joyce has a wider perspective on the range of subjects that can be linked to a visit at Wakehurst in comparison to other teachers who have a more narrow view that Wakehurst visits are valuable as long as they are related to science. Joyce's wider perspective shows her good teaching skills which may be also linked to her long professional experience. That suggestion cannot be generalised uncritically, as newly qualified teachers may have also good teaching skills because of their training and other life experiences, and because of how they conceptualise the purpose of education and schools.

Michelle's interaction with Joyce, and how they developed the trees mythologies activity, which ended with pupils dressing up and performing short stories around trees they found on a trail, is an example of teacher and educator complementing each other's skills.

> **Researcher:** was it your idea to dress them up?

Michelle: well I rang Joyce last night because I was a bit worried about the ending. I was a bit worried about the stories and dividing them into groups, and then they didn't know what to do, and she said have you got anything to dress up in? So I said well, I got loads of hats at home and then I thought if I just give them, set things, then they can just do whatever with them.

Researcher: it's amazing because if you see that stuff in front of you, you would think oh what does this stuff have to do in the gardens?

Michelle: yes, and all the different hats are to give you a different role. They used them a bit tenuously, but it didn't matter because all they were doing was enabling them to feel confident, and play their role really, so that was a good idea of hers (Interview with Michelle, 18/5/2007).

Michelle and Joyce were creating experiences which fostered pupils' immersion in the gardens as the activities were interesting (Michelle told the pupils 'tree' stories which allowed them to see the Wakehurst trees from a different perspective), they were involving (the pupils enjoyed the dressing up part of the tree mythologies activity), they engaged pupils' imagination (the pupils used the tree stories as an inspiration to create and re-enact their own tree stories), and they were interactive (through the drama in the garden the pupils used their body and mind to participate in the activity, to interact with their colleagues and their surroundings). See Burbules, 2004 for a discussion of the aspects of immersion in an experience. Mattessich & Monsey (1992) have also suggested that the success of interorganisational collaboration is influenced by official agreed channels of communication, but also by the informal communication that members across the organisations develop through personal connections in order to ensure the information flow. The incident showing how Michelle and Joyce collaborated indicates a 'match' between their theories of learning, but is also evidence of the very good formal and informal communication channels they had established, and which contributed to the success of their collaboration.

❖ A routine of collaboration

Joyce in her interview described how she works with Heather and Michelle. It appears that a specific process of collaborating had been established, characterised by a high level of involvement and interaction between teacher and educator.

Joyce: Heather, yes I think she is really good I don't actually work with anyone else but I think the two of them (Heather and Michelle)...you know some are very good…I've been lucky with the people I had…it might make it difficult I suppose, if somebody who wasn't as creative as the two of them…and dedicated.

Researcher: Can you tell me what you discussed during the planning meetings?

> **Joyce:** I always tell them what I am doing in the curriculum at that time, and pull out things that might be developed. For example, the Shelter building, I told Michelle that I wanted to do something about survival skills and we were reading a book called Wolf Brother, and she linked it very closely to the book, and she read the book, which is great, and she pulled out bits from it that she could use to make it feel part of the survival skills and the whole topic area. And it was the same thing, I had a planning meeting with Heather, and we did the same about WWII, and she went off and did some research, and I told her I wanted to do something because we had some idea what we are doing that day, the links and things, but they will do some additional bits, different bits for us. So we discussed what I am doing, we discussed what they've got available and then they go off and they come up with these creative ideas and that part really works.
>
> **Researcher:** Did you have any fixed ideas about the activities for the visit?
>
> **Joyce:** No, 'cause the discussion is going to, there's got to be fixed ideas about the basic objectives you want to achieve at the end of it, but how the activities run, they are not fixed on. I think the objectives are the important point, and then you go from objectives to the activities. And say the objectives can be achieved by different activities (Interview with Joyce, 3/11/2006).

Joyce explained clearly the way she works with both Heather and Michelle, which might be seen as a model for all the planning meetings for school visits to Wakehurst. The distinctive aspect of their planning process is the clarity of the learning objectives set from the beginning. The literature has highlighted that one of the factors contributing to the success of collaboration is having goals and objectives that are clear to all partners and preferably formally declared (Mattessich & Monsey, 1992; Legler & Reischl, 2003). In cases in this research where dissatisfaction has arisen from either the educator or the teacher, one of the reasons has always been a lack of clarity around learning objectives and a failure to reach agreement when planning a school visit. When the individuals have an established relationship, such as in the case of Joyce with Michelle and Heather, then the clarified common objectives are almost guaranteed to be met. Furthermore, the way that Joyce works with Heather and Michelle, in their close collaboration can ensure very good links between pupils' learning at school and learning at Wakehurst, and achieve the continuity of pupils' experience across settings. Such a continuity of learning is suggestive of an interactive Deweyan perspective of experience according to which

> an educative experience must achieve a continuity in which the past and the present interact to create the future, and the meaning of such interaction is directly correlative to the connection we make in the process (Roberts, 2008, p.22).

The interview excerpt, above, also shows that the degree of trust between teacher and educators has been acquired as a result of previous collaborations which fits with the Collaboration Loop (II) of the *Collaboration Double Loop model* in Chapter 6 (see p. 222).

Michelle also described her view of the process of collaborating with Joyce:

> **Michelle:** well I think every time that I work with her, it kind of gets better really, cause we now really know how the other one is thinking, she sets me challenges and I have to go off and do research, which is a fresh attitude. When I do things like that, because I find something new myself, so it's not something I do day in and day out, she set that new challenge, and I think she feels confident that I am going to come up with something interesting; so I think we work very well together as a team. In a sense when I work with her I have a much more broader scope (Interview with Michelle, 18/5/2007).

Seeing the collaboration as a challenge is indicative of the high value that not only the teacher but also the educator places on the collaboration. Michelle's comment suggests some coherence in the way she and Joyce thinks about learning and teaching (i.e. their theories of learning and pedagogy). Without such coherence the collaboration could not be as successful. Furthermore, Michelle expressed her appreciation for the collaboration which provided her with benefits beyond the short term delivery of a school visit. She specifically sees a 'broader scope' when she works with Joyce. The fact that both educator and teacher are eager to create something new every time they work together is very important for continuing and improving their collaboration. Joyce was an experienced teacher[24], had been teaching at Cherry Tree Primary for 4 years, and so she had visited the garden many times with her class. It was crucial for her that the visits had a novelty factor every time she visited so that she retained her enthusiasm and excitement. In addition, the visits were important to Joyce due to her passion for environmental education.

❖ An overview of Joyce's collaboration with Heather and Michelle

All three class 4 visits to Wakehurst could be described as successful in various aspects. The learning objectives were met, pupils did learn what they were supposed to learn as I

[24] It should be noted that experience does not always correlate with teaching skills, as some newly qualified teachers may be very good teachers, and some experienced teachers may have lost their enthusiasm in teaching as it has been commented previously in the data analysis.

found through my interviews, during the visit there were high levels of enthusiasm from all the participants, and the process of collaboration resulted in significant satisfaction between the teacher and the educator. A major factor in the success of this collaboration was the individuals' relationship. I discuss individual relationships further in this chapter as it is a main concept for the development of the collaboration model in section 7.4 (pp. 259-269). During my observations of how Cherry Tree Primary class 4 visits to Wakehurst were organised, I noticed various elements of individual collaboration. The teachers shared common theories of teaching and learning, creativity, enthusiasm, a cross curriculum approach, love for nature and the environment. These commonalities were a strong factor in initiation stages of their collaboration, and they gradually established a process of interaction characterised by a high element of good communication, involvement, trust, understanding, all of which contributed to the development of their professional relationship. The process of their collaboration was also characterised by continuity, collaborating for the longer-term rather than for a one-off visit, and a positive approach which meant a friendly and enthusiastic attitude during their interactions. The outcomes of that process, the visit activities and how they were implemented included high quality experimental programmes. The importance of experimentation and growing professionally are factors that characterise Joyce's collaboration with Michelle and Heather, and such collaborations have also been reported in the literature as important for enhancing museum – school partnerships (IMS, 1996). The content of the activities was still related to the school curriculum, which may be regarded as a constraining, obligatory element of the visit, however, the learning opportunities created were not lacking in imagination, innovation, or fun. The manner in which the individuals were collaborating meant that they complemented each other and had established their own way of interacting, and their own routine. The majority of the environmental learning experiences co-created by Joyce, Michelle and Heather achieved pupils' engagement as they comprised aspects such as interest, involvement, imagination and interaction (see Burbules, 2004), they were highly relevant to the pupils not only their learning in school but relevant to their lives in the local community, and to their family lives, and were fun as they expressed their enjoyment from the visits.

Furthermore, Joyce's experience contributed to how well she could create links between the activities in the gardens and the activities in school. Heather and Michelle also had extensive teaching experience, Heather in geography and Michelle in biology. Both had been at Wakehurst for four years. They had very good knowledge of their subject matter, used appropriate pedagogy, and were very confident with teaching outdoors. Joyce

appreciated the educators' abilities and that was definitely a factor that made their collaboration more successful.

Joyce's experience, creativity and passion for environmental education in combination with the fact that she collaborated with highly creative and experienced educators meant that she was not restrained by the pressure for her pupils (Yr5) to achieve in the annual exams and the heavy workload demanded in order to meet the curriculum requirements. Despite these factors Joyce never complained that she visited the garden too often with her class, always found time to devote to detailed planning meetings, and ensured that the visits were always contributing to her teaching targets. Karen and John, younger and less experienced teachers did not have a close collaboration with individual educators and complained about specific visits to Wakehurst that did not readily connect with their teaching in the school, as a result of which they did not see the value of those visits. In addition, and probably because it was the beginning of their teaching careers, their priorities were to achieve well within the school environment, hence they were not as flexible as other teachers and less prepared to devote their time and efforts to get more involved in planning visits to Wakehurst. As mentioned previously, the educational priorities and pressures that teachers face in the school do not allow them much time to devote to working with Wakehurst. Joyce's collaboration with Michelle and Heather is a very good example of how teachers can overcome constraining factors. The point to be made here is not that novice teachers are unable to achieve successful collaborations, but rather that it is important to identify opportunities for novice teachers to develop collaborative skills and relationships. Esther was a newly qualified teacher and her successful collaboration with Kelly (Wakehurst educator) will be explored later in this chapter.

The activities developed through the interaction of Joyce with Heather and Michelle enriched Wakehurst's educational activities and also encouraged other school visits to the gardens. Importantly, as the individuals had previously collaborated and implemented the same programmes, they gave feedback to each other during planning meetings on how the previous visits went, and agreed on changes and improvements. Organisers of other school visits did not engage in this level of planning and feedback with educators saying that they did not get feedback on how visits had gone and so improvements were unlikely to be made for future visits. The individual collaborations such as those between Joyce, Heather and Michelle contributed to the development of the Wakehurst learning programme, not only creating new activities, but by improving existing activities and parts of the school visit that were not as successful before.

Having described Joyce's collaboration with Michelle and Heather, and explained the particular elements that contributed to its success, I will now examine other individual collaborations in order to further explain my model of collaboration, the *Individual Collaboration Continuum,* particularly in relation to building individuals' relationships across organisations.

Amy's & Anna's relationship with Michelle

Another example of individual collaboration comes from Oak Tree Primary. Michelle had been working at Oak Tree Primary before she became an educator at Wakehurst and she had a long friendship with Anna, the music teacher of the school. Her relationship with Anna was acknowledged by the staff of the school as a decisive factor in the collaboration between the two organisations. I have already described the details of Oak Tree Primary's visit to Wakehurst based on Habitats and Adaptations in the previous chapter (6.3 section). Although Amy was the main teacher of the Yr6 class, and she determined the focus of the visit to be related to the science topic, it was Anna who came to Wakehurst for a planning meeting.

Michelle, described her relationship with Anna, and some common interests that played a role in the organisation of the visits:

> **Michelle:** I am doing Oak Tree Primary visit. I suspect they want to do something creative because Anna told me the other night that the curriculum is not creative, and she's been in a lot of courses and she has really pushed this creativity in. So, I think they will probably have a combination of things. Well habitats will be ok, and we can maybe do some of the habitat bits we did with Cherry Tree Primary, out in the woods.
>
> **Researcher:** do you have the same relationship with Anna that you have with Joyce?
>
> **Michelle:** Anna is a friend, and I have taught her groups twice but they have been art days, and Anna and I get on very well, and Anna is very creative. She is an English graduate, but she is also music teacher, so when we get together we always talk about books and art. I did have a quite long chat with her last night[25] about the progress they had, and about what I have been doing with Cherry Tree Primary and my collaboration with them, and she thought it was very very

[25] The fact that Michelle and Anna communicate during the evening in relation to organising the school visit is another indication of how their friendship and their collaboration are interlinked.

> interesting. The collaboration with the schools is a bit of a personal thing isn't it? Well I think the things I've done with Joyce quite a lot of them could be developed for other people to use, certainly the stuff that I did out in the woodland. I would like to develop those more so when they do minibeasts, that could be part of a minibeast day. So, they are doing the minibeast and then they are looking for evidence of bigger creatures as well, like birds (Interview with Michelle, 18/5/2007).

Michelle already had some ideas about the visit with Oak Tree Primary and what the teachers would regard as essential even before the planning meeting. This is because she had collaborated with them before and she knew the teachers' expectations and methods of working which made the planning process easier. History of collaboration and personal relationship of the individuals are both important factors for the success of the collaboration (Mattessich & Monsey, 1992). What is also important here is that there is an informal way of communication between Michelle and Anna because of their friendship which is also useful for organising the school visit. Michelle again emphasised that she expects her collaboration with Amy and Anna to have wider benefits for her work, which means that she views the collaboration as in her self-interest, especially as it contributes to her professional development. Michelle also, differentiated her relationship with Anna from her relationship with Joyce, the first being a more personal relationship and the second being a close but still mainly professional relationship.

In the end the visit was mutually agreed by Anna and Michelle to have a focus on science, and it included the activities trail following the water course at Wakehurst, animal tracking, pond dipping, minibeast identification, terrestrial minibeast hunt, and comparing habitats. During the planning meeting Anna and Michelle discussed the schedule of the day in detail, including practical issues such as health and safety. What was special about the visit was the trail that was designed for the day and included animal tracking – the activity that had been implemented for the first time for Joyce's class which did animal tracking in the woodland area (the previous transcript explained Michelle's thinking on using activities she had designed for Joyce's class with other schools). Also, the activities took place in the field studies centre and the wetland area which is quite a distance away from the mansion and the gardens area. Primary schools rarely have activities there, partly for health and safety reasons. Since Michelle trusted and knew that Amy and Anna would safeguard the pupils, she felt she could take their Yr6 class there. The visit was very successful in terms of achieving the learning objectives and the adults also enjoyed the visit. Amy created a variety of links between

what the pupils learned in school and their learning in the gardens which shows an emphasis on an interactive perspective of experience (Roberts, 2008) that values a continuum of experiences across contexts. In addition, she reported that she had learned teaching techniques which she intended to use at school when the pupils were completing the pond in the school grounds. Although the interviews highlighted Michelle's friendship with Anna, Amy's enthusiasm and general attitude towards school visits to Wakehurst is also an important factor. She is not a close friend of Michelle's, but they still had many things in common such as shared views on teaching and learning.

Once, again, I identified mutual characteristics, interests and preferences that not only Michelle and Anna share, but Amy as well, such as creativity, enthusiasm, a cross curriculum approach, and a love of the environment. Trust, communication, and understanding are also shared by both sides and have been identified in the literature as important factors contributing to the collaboration success (Mattessich & Monsey, 1992). This collaboration is characterised by continuity and a positive climate, and the outcomes of the collaboration usually entail innovative activities, for example, in previous collaborative projects, science and art were combined in unusual ways – a cross curriculum approach that Amy, Anna and Michelle prefer. Through this the curriculum requirements are met and the school visit is a more meaningful learning experience and fun.

Amy, described her previous visit to Wakehurst which combined science and art:

> **Amy:** Last year I was doing microorganisms and I was also teaching art, looking at buildings and perspective and that sort of thing. So Michelle devised a day where we looked at the buildings, then we tried to measure the height of the building by various means, we sketched bits of the building. We also had sessions with the microscopes, looking at times 4 bigger, times 25 bigger, times 200 on those big microscopes. So we were getting closer and closer into the same thing, we were getting very tiny, and then we were getting big with the building and then in the afternoon we put the two together; so for the sketches they did using the microscopes, we used large sheets of paper, and they did the outline of the building that they got and they put the shapes of the flowers and the plants that they discovered within that. So we had art and science all mixed up; it was very good day. We always work well together. Cause Michelle has taught here (Oak Tree Primary) for a while. She did some supply teaching. She knows the school as well. She did some science for the SATs a few years ago, before I started having year 6 (Interview with Amy, 21/9/2006).

Amy not only appreciated the innovative character of the particular visit, but she also used elements of the visit and ideas she got from an exhibition at Wakehurst about things other schools had done, as the school's week focused on creative activities. She commented on Wakehurst:

> **Amy:** It's a very good place to go to. You get a bit more inspired for what you want to do and what you can do as well (Interview with Amy, 21/9/2006).

What is obvious in the above example is that what happens during a visit to Wakehurst has advantages for the school, as well as for the teachers who get ideas that they will use either in their teaching or even for professional development courses. Thus, the outcomes of the visit have added benefits for the school which the teachers particularly appreciate from the collaboration. Amy has a wider perspective on how a Wakehurst visit can be linked with the school curriculum, not only through science but also with the arts, which is a perspective that Joyce also has as has been mentioned before. The emphasis that Michelle, Anna and Amy placed on developing creative and innovative activities contributes to pupils' engagement in the environmental learning experiences. These are interesting, they stimulate pupils' imagination, and the pupils get highly involved as they enjoy the experience and interact with each other and their environment through the hands on activities. Interest, involvement and interaction are aspects that indicate the immersion of individuals in an experience as Burbules (2004) has explained.

Another important part of the collaboration is the fact that whenever Michelle needs a school to trial activities or to invite for a special publicity event she is confident that she will call her friend Anna and with Amy's agreement she will arrange Oak Tree Primary to visit Wakehurst. In the following transcript Michelle explains how she became an educator because of her part time teaching at Oak Tree Primary, and also how her relationship with Anna and the school allows her to invite the school to special occasions:

> **Researcher:** so how did this relationship develop first of all?
>
> **Michelle:** well because I know Anna and I had actually taught in the school before, I went to Wakehurst. In fact it's through Oak Tree Primary that I am actually working at Wakehurst. I was working for them, and I was going in and helping to teach science, and actually to kind of cram them for their SATs. And in the week they had their visit to Wakehurst, teachers had an INSET, and I met Jean T. (head of Wakehurst learning programme) there, and I asked her how I could get a job there. That must be six years now, and they went there for a morning. Ehm so I mean, through Anna first of all, then I got to know the teachers there and so, if we ever need a school, a short notice for something like we have needed for the big draw, then I either ask Oak Tree Primary or Turners Hill cause

they are the ones that I know – knew best then. But I could ask Cherry Tree Primary now cause I know Joyce so well. Ehm, so that's where the relationship stems from. And Anna is very very keen on creativity, and so she's always keen to get out and do arty things, and quite happy to combine art and environmental things as well.

Researcher: if you want to trial a new activity which school would you choose?

Michelle: well I choose ones I knew the people, so it would be Oak Tree Primary, Turners Hill or Cherry Tree Primary. Not Elm Tree Primary for me because I haven't got link with them, but I have with all those three. So they'll be my immediately first port of call. So I think it is a very personal thing isn't it really? (Interview with Michelle, 25/6/2007).

What became evident during my discussion with Michelle was that her personal relationship with specific teachers meant that the collaboration produced a wider variety of projects and learning opportunities for the pupils. Michelle's account also shows the flexible nature of the collaboration with the schools, an example being that even with short notice the schools are willing to accommodate projects for the benefit of the Wakehurst learning programme. Collaborative groups need to be flexible in their structure and remain open to varied ways of organising activities and accomplishing their goals, according to the literature, which is evident in the schools that Michelle referred to (Mattessich & Monsey, 1992; Thorkildsen & Stein, 1996). However, it could be argued that in one-off collaboration projects such as the Billionth Seed, or the activity trials, which are aimed primarily at fulfilling organisational needs, the pupil learning benefits may be limited compared to learning experiences that are connected with what the pupils are learning at school at the time. While the pupils may enjoy and become engaged in the activities, the interactive perspective of experience (Roberts, 2008) is rather ignored in those projects.

- **The convergence points between Joyce's collaboration with Michelle and Heather, and Amy's and Anna's collaboration with Michelle**

Looking at the above cases and the individuals involved, Joyce with Heather and Michelle, and Amy and Anna with Michelle, it could be suggested that these individual collaborations are successful because of the interaction between very charismatic, creative people. This is partly true. However, my research shows that even if the people who collaborate are not charismatic, the success of the collaboration may be achieved

provided there is high level of involvement between teacher and educator and a relationship is built between these individuals who, at least in part, share common characteristics, interests and learning and teaching theories. My data suggest that when the level of individual involvement in the collaboration is high more successful collaborations occur. Another way of looking at the collaborations is that successful cases entail building a relationship between individuals. That way, people know how each other will respond, know that they complement each other, and trust that putting effort into the relationship will pay off with successful results. The positive attitude towards the collaboration was also evident during the school visits, where the teachers were enthusiastically participating in the activities, and encouraging pupils' engagement as well. It should be noted that the teachers and educators involved in the above examples have many years of teaching experience and have developed excellent teaching skills in planning and delivering activities in and out of the classroom and those elements contributed to the success of their collaboration.

Looking at Joyce's collaboration with Heather and Michelle, and Amy's and Anna's with Michelle, they all fit within the Relationship domain of Cobb & Quagglia's model (1994) (see literature review table 3-1). This model, which explains choices that exist when establishing school – business partnerships, distinguishes the partnership domain, that emphasises a more structural macro-level development of the interorganisational collaboration, from the relationship domain that emphasises a micro-level approach to the collaboration. Characteristics of the relationship domain include its dynamic nature, establishing relationships among people, concentrating on individual needs, self examining, multiple power bases, multiple benefits and task-orientation. The aforementioned collaborations of teachers and educators at Wakehurst were dynamic in nature, in the sense that they were developing new activities rather than replicating already developed ones. They were also based on relationships between the individuals, and special attention was focused on matching the needs of the pupils with tailor-made activities in the gardens. The participants had an evaluation system which included reflections on previous visits and on ways to improve pupils' experiences. These collaborations were based on the teachers' and educators' willingness to interact rather than being forced by their employers, and had multiple benefits including the development of the Wakehurst learning programme with the addition of new activities. The resources and energy of the people involved were focused on reaching a shared goal and creating high quality outdoor experiences for the young people.

Mark's relationship with Margaret

My next example comes from Cherry Tree Primary and has been explained in detail in the History of collaboration chapter (section 6.3.). Mark, class 5 teacher, had a negative attitude towards the school visits to Wakehurst; he had lost his enthusiasm which he initially justified by the fact that people usually do not appreciate what is on their doorstep. In addition, visiting Wakehurst and the regularity of the visits was not his personal decision but rather imposed on him by the school's policy, so he was obliged to go. For these, amongst other reasons, he would usually not have face to face planning meetings, and any communication on the phone about the visit would be kept to the basics. During the school visits he would not get very much involved, as he regarded the visit as something of a day off for the school teacher. Given the successful story of collaboration between Joyce and Heather and Michelle, and Amy and Anna with Michelle, explained earlier, the question that arises is how could Mark's attitude to the collaboration change? Is it possible that he could be 'matched' with an educator who understood and shared his theories of teaching and learning? Mark was very driven by a need to address curriculum objectives especially as he was teaching Y5 and Yr6 pupils. An educator who was very science- or objectives-focused may have been a better match for Mark. The *Collaboration Double Loop* model described in Chapter 6 (p.222) and also the *Individual Collaboration Continuum* model which will be explained in this chapter (on p.259) illustrate not only stories of success and failures, but also how opportunities for change may occur and how collaborations that failed previously may become successful in the future. Mark's relationship with Margaret is an example of that kind of change.

Mark's attitude after the spring visit of his class to Wakehurst changed. He especially appreciated the work of the leader educator Margaret, with whom he found that he shared common characteristics, and professional values and he expressed an intention to request her for his next visits to Wakehurst. Having observed both the teacher teaching in the class, and the educator teaching in the gardens, I would say they had similar teaching styles. They were both very knowledgeable in their subjects, very clear in their learning objectives, and in communicating these to pupils, and they shared similar views on pupil discipline.

During the summer term, Cherry Tree Primary KS2 teachers, Joyce, Mark, and John, went to Wakehurst to plan the KS2 pupils' non-assisted visit to Wakehurst on orienteering. During their discussion the teachers reflected on the assisted visits they had at Wakehurst, and Mark compared the educators he collaborated with in the past.

> **Mark:** my last Wakehurst trip when we had…What's her name?
> **Researcher:** Margaret
> **Mark:** yeah she was brilliant. I mean that's what they should all be like. If they are all like her I wouldn't mind…we had a less than inspiring leaders before but Margaret was fantastic. She told the kids what's what. I mean they were so well behaved. Having had the trip in October, when I came here for the autumn visit I just thought they were too noisy
> **Joyce:** you also said they were bored, didn't you?
> **Mark:** they were bored because the educator wasn't brilliant whereas I was very impressed by Margaret (Cherry Tree Primary KS2 teachers' discussion, 4/6/2007).

Mark referred to specific characteristics of the educators, which he regarded as very important for the collaboration to be successful. Mark pointed out that his pupils were noisy during the autumn term visit which was an indication, to him, that Kelly, the educator, was not competent enough; moreover, the pupils were bored. However, the next collaboration story will show that Esther, another teacher from Cherry Tree Primary, regarded Kelly highly. Esther and Kelly worked well together and formed a good relationship. That point illustrates how important it is the teachers and educators to 'match', as will be illustrated in the *Individual Collaboration Continuum* model (on p.259).

Esther's relationship with Kelly

Esther, Cherry Tree Primary's class 1 (reception and Yr1 pupils) teacher, organised a visit for her class with Kelly in the summer term. Esther had been on a visit with Kelly before, so they were familiar with each other. During their collaboration there was trust, good communication, enthusiasm and creativity, and as a result innovative activities were planned and implemented. The visit, based on the topic of Plants and Growing, was related to science and personal, social and health education, and included the story of the sunflower, sensory trail with story sticks, the tiny seed story and a tailor-made activity tour and buying plants at the gardens' flower shop. Esther did not deliberately chose to

work with Kelly the second time, it just happened. However, because of their previous experience they achieved high levels of involvement in planning and implementing the visit, and the Wakehurst mini bus was provided to transport the reception pupils as they were too young to walk to the gardens. The summer term visit could be regarded as successful not only because pupils learned what was set to be learned by the activities' objectives, as I found out during the pupils' interview, but also because of the participants' enthusiasm and the satisfaction that was evident during and after the visit. Both educator and teacher were very happy with the outcomes of the visit. Esther, who had implemented many activities at school before and after the visit, in relation to the topic of Plants and Growing, explained how she had clarified with Kelly which activities she would do in class, and which ones she would do at school so that no overlap would occur:

> **Researcher:** you've done so many things before the visit, so I am not sure how many things they learned at Wakehurst?
>
> **Esther:** the new things they learned at Wakehurst were, they had really closed observations of the seeds, and Kelly soaked some sunflower seeds, and you could actually see them begin to germinate. We haven't done that in class. Also, they did very close observations of the roots. I left that because I knew Kelly was going to do that; so I was going to do that in class but I didn't; I thought it would be nice 'cause they did it as a group actually at Wakehurst, and they had never taken actually the seedlings out before and had a look at them at the various stages, so that's the new thing; so they've seen that roots get bigger and the one that's just the flower.
>
> **Researcher:** and what did you think of the planning meeting, how did it go?
>
> **Esther:** My one was actually all over the phone. 'Cause I didn't actually get to go and talk to her, she had some ideas, she knew they were the younger ones, and I told her they had to be very short bits of information that she gave them, because they have a very short attention span these children. She had to make it short, sharp and to the point. I had worked with Kelly before, so I was quite happy with what she planned (Interview with Esther, 9/5/2007).

Esther based her teaching in the school and how she planned the visit to Wakehurst on an interactive perspective of experience (Roberts, 2008), as she ensured that what the pupils were going to learn at Wakehurst would be extending what they were learning at school on the topic of Growing. The pupils were immersed in their gardens experience as it allowed them to interact with the plants – Burbules, (2004) explained interaction as one of the processes through which an individual immerses in an experience – and they used their senses to explore similarities and differences between plants in various stages of

growth. Esther also emphasised the social nature of the activity, the fact that they did the activity as a group which brings a Deweyan emphasis which values the shared experience over individual-centered learning (Dewey, 1938). Falk & Dierking (2000) also identified 'within-group sociocultural mediation' in the sociocultural context of their Contextual Model of Learning. 'Social groups in museums utilize each other as vehicles for deciphering information, for reinforcing shared beliefs, for making meaning' (ibid, p.138). In a similar way, the pupils at Wakehurst drew on each others' attention to specific characteristics. When they were observing the plants, they were exchanging ideas and reaching joined conclusions.

The above excerpt shows the factors that contributed to the success of Esther's and Kelly's collaboration, i.e. understanding and trust, as they had collaborated in the past together; good communication, even if it was only on the phone; both sharing a stake in process and outcomes of the collaboration, which was achieved through the planning meeting; and a clear definition of roles and responsibilities, all of which were evidence of a developing professional relationship between the two. These factors have also been pointed out in the literature as contributing to successful interorganisational collaborations (Mattessich & Monsey, 1992; IMS, 1996). Moreover, Esther's interview also shows how clear she was about which activities, on the same topic, would be done at school and which at Wakehurst, and illustrates her teaching skills in terms of preferred pedagogies when teaching younger pupils.

Esther was a recently qualified teacher in her third year of her teaching. However, that did not have any impact on her confidence about taking her young pupils on a visit to Wakehurst in comparison to the concerns that Karen raised in relation to health and safety (see Chapter 6). One explanation for Esther's confidence is that she was a mature student when she received her teaching degree, with life experiences, including raising her own children. Esther's enthusiasm and eagerness to take her pupils to Wakehurst also reflect her valuing of outdoor and environmental education. Her daughter was studying environmental science at university, so it seemed that environmental concern was a family interest as well. Esther had explained during the interviews how vital it was for her young pupils (age 6 and 7) to experience the outdoors within their school education, and the way she organised her everyday teaching included a combination of activities indoors and outdoors. Also, she was very passionate about environmental education activities in the school such as composting, growing vegetables and recycling, which she linked with her visits to Wakehurst. Moreover, the fact that Esther was teaching the younger pupils (Reception and Yr1) meant that she did not have the same pressures that teachers of older

pupils had (Yr5 & Yr6), such as, preparation for exams. Hence, she could devote more of her time and energy to the collaboration with Wakehurst educators. The teacher's mature age, her values in relation to outdoor and environmental education, and the fact that she had less pressure for the pupils' achievement, were all factors that had a positive impact on the collaboration.

It is also interesting to look at Esther's successful collaboration with Kelly in comparison to Mark's collaboration with Kelly which failed to inspire his enthusiasm and satisfaction. A crucial factor that contributed to Esther's collaboration with Kelly, which was lacking from Mark's collaboration, was that Esther had worked with Kelly previously and knew what to expect from the collaboration. The positive personal history of collaboration between the teacher and the educator is depicted as an important factor in the *Collaboration Double Loop* (Chapter 6, p. 222). More importantly, Esther's personality, and teaching style were 'matching' with Kelly's, and that 'match' affected the development of their professional development as it will be illustrated in the *Individual Collaboration Continuum* (p.259).

Bringing individual collaboration stories together

After finishing my fieldwork, I returned to Cherry Tree Primary to present preliminary findings of my research and the following excerpt from the discussion with the teachers brings together Joyce's, Mark's and Esther's collaboration with Wakehurst educators:

> **Researcher:** so what do you think is the contribution of Wakehurst to your school? Do you think there is a contribution?
>
> **Joyce:** well I feel that is it for Michelle, work that I've done with her, doing special tailored things, things that I want, and that's been great. That's a contribution when we take our children out. She said every time is a challenge; every time I come to her is a new challenge (laughs); she also said she likes working with me. She likes the creative element.
>
> **Esther:** do you work with the same teacher?
>
> **Joyce:** I've worked with two teachers, Heather for the WWII theme, and all the other time I work with Michelle.
>
> **Esther:** ok. I think probably that if, I mean I am going up to the Millennium Seed Bank there's completely different person, I've never had the same one.
>
> **Joyce:** I've actually asked the same person.
>
> **Esther:** We've got Zoe this year. Whom did we get before?
>
> **Researcher:** Kelly?

Esther: Kelly ehm and maybe that's what Karen and I should do as well, ask for the same person

Joyce: find someone that you feel good with, who speaks like you

Esther: and who has been working with the younger children, because not everybody is happy working with the younger ones

Mark: who is doing the secondary?

Researcher: Margaret

Mark: MARGARET (with emphasis)

Joyce: you liked her, didn't you?

Mark: very much. Well she is secondary trained. She just couldn't take a nonsense from the kids, so she tells them what to do. A couple of educators, they just don't know how to do this (Preliminary finding presentation at Cherry Tree Primary, 26/9/2007).

The above discussion illustrates how building individual relationships in interorganisational collaboration emerged as an important factor. Characteristically, Joyce's collaboration with Michelle set an example for the other teachers to follow. Mark would request the same person again, Margaret, for his next visit to Wakehurst, and he was also thinking of collaborating with Michelle for a more experimental visit related to Shakespeare, something that he did not think of before. He definitely became more positive about the collaboration. Esther, also listening to Joyce's case, was contemplating establishing a more stable collaboration with one of the educators at Wakehurst, Kelly, with whom she had worked before and she also appreciated her abilities to teach younger pupils. Another pattern that also emerged was teachers appreciating educators based on their teaching abilities for a specific age group of young people. Mark, who was teaching Yr 5 & Yr 6 appreciated Margaret who was very good teaching older pupils, and had secondary experience. Esther appreciated Kelly, who was very good teaching younger pupils. Hence, the educators' teaching abilities influenced the success of collaboration.

The Wild View project based on building a good relationship

More evidence that highlighted the importance of individual collaboration and higher levels of involvement comes from the Wild View project (details on what the project entails have been given in Chapter 5, description of the cases, pp. 160, 165). Richard, the head of the arboretum unit, and responsible for the project, explained that he felt that collaboration was a rather personal thing. He said that he chose the schools involved in

the project because one of them is the school his son will attend, another because it is the old school of his colleague who is also helping with the project, and the third school because it is the school that the administration officer's son attends. Mattessich & Monsey (1992) note research evidence that shows that one of the membership characteristics that will contribute to the success of interorganisational collaboration is that members of a collaboration see the collaboration as in their self interest. The self interest characteristic exists when staff from the gardens initiate projects with the local schools because of their personal connections with the schools.

Moreover, Richard explained the process of collaboration with the schools and what he is looking for:

> **Richard:** I think that you ultimately end up building a good relationship with normally one member of staff, or one of the helpers from each school. Cause you are relying on someone from the school to pick it up and be really enthusiastic, and I think some schools will, and they will get a lot out of it, and other schools that are busy doing lots of other things probably won't get as involved. What you are looking for is not necessary the head teacher, but you are looking for someone who sees the potential, who thinks 'yeah, I really want my class to be involved in that. And so that's what I was hoping would happen (Interview with Richard, 21/3/2007).

Richard understands the busy context of the school's environment which comprises a lot of priorities, and he acknowledges that not all the schools will embrace collaborative projects with Wakehurst. In order to stimulate collaboration it is important to find an enthusiastic person within the school who will be interested in taking responsibility for the collaboration. Commitment and establishing relationships between people across the organisations who collaborate are important factors for a successful collaboration (Thorkildsen & Stein, 1996; Cobb & Quagglia, 1994; Shaw, 2003). These are the factors that Richard is looking for when he approaches schools to initiate collaboration with Wakehurst.

In order to develop a personal relationship with the school teachers, Richard explained how he intended to stay in contact with them.

> **Richard:** as the project continues over the next three months, what myself and Nick will do, is probably three or four times going back to the schools, first of all to make sure the equipment is working, and then also just to make sure that the project and the excitement and what they committed to is still going well. And I think you force them into a situation; it is kind of an emotional blackmail, because

> they can see that you are putting a lot of effort in, so if they haven't sent one of the forms back on a Friday, they know I will be disappointed, and I want to build a personal relationship with them rather than just do things through e-mail or through letter writing (Interview with Richard, 21/3/2007).

Richard's strategy sounds like a nurturing activity for the collaboration which is important, as Huxham & Vangen (2005) have also pointed out, in order to safeguard the future of the collaboration. The physical contact rather than the neutral e-mails, the regularity of the contact, and Richard showing with his attitude how important for him the Wild View project is, are ways that will hopefully motivate people from the school to value and participate in the project. These kind of strategies, and that kind of thinking, are important points to consider when botanic garden staff (or staff from other outdoor education settings) plan to engage schools in collaborative projects.

As for the value of the experience for the pupils who participated in the project and their learning benefits, it should be noted that the project was not designed to fulfil any curriculum requirements. Richard held a rather interactive perspective of the experience (Roberts, 2008); Wild View aimed to increase pupils' awareness of their natural environment, to create a continuum between their experience in the local environment (e.g. birds they observed or even fed in their home garden) and the experience in the school during which they would observe closely the nesting process. In addition, Wild View was a highly interactive experience in the sense that the pupils interacted with their environment, they participated in the choice and positioning of the bird-box, and then they followed the birds' nesting behaviour for a two month period. One of the factors that contributed to the pupils' engagement in environmental learning was that the content of the experience was relevant to the pupils' lives; not necessarily relevant to the school curriculum, but to their lives in the local environment. During the project many pupils recalled experiences in nature with their families in which they encountered young birds, nests, or experiences in their home garden where they had placed bird boxes, or when they were feeding birds. Rickinson *et al.* (2009) have also pointed out the importance of looking at whether an environmental learning experience is relevant to the young people. The Wild View project also combined aspects of an experience that contributed to the pupils' engagement: the experience was interactive as the pupils observed the birds' behaviour on a daily basis. This was particularly interesting because the pupils learned about birds' nesting from inside, using micro-cameras, while before they could only observe what was visible from outside. This was more involving as the pupils could feel that the experience concerned them, and it was imaginative, as the pupils could use their

imagination to predict what was going to happen next, or to explain the behaviours they observed. Burbules (2004) has also identified interaction, interest, involvement and imagination as processes through which an individual immerses in an experience.

7.3. Failure to inspire relationship building

I observed other collaborations (e.g. Karen's collaboration with Juliet, p. 257, or Mark's collaboration with Kelly, pp. 221, 249) where the levels of participant involvement and interaction in the planning and implementation process were low. The outcomes of the collaboration in these cases did not seem to arouse much enthusiasm from the teachers or educators such that they would continue their *personal* collaboration in the future. Also, communication problems were evident during the collaboration, there was a lack of enthusiasm, and there was a narrow perspective that the Wakehurst visit could only be related to a particular curriculum focus, e.g. science. I did not find innovative, creative activities developed in those cases and no trace that the educator shared common characteristics, interests or preference with the teacher so that they complemented each other and were willing to continue their collaboration in the future. The school and the teachers, however, would continue visiting the gardens since there is a commitment and long relationship between the organisations that in a way secures its future.

The examples of collaborations between educators and teachers that failed to inspire relationship building can also act as negative evidence or counter examples. Looking for negative evidence is one of the ways that Miles & Huberman (1994, p.263) propose for testing 'a conclusion about a pattern by saying what it is not like'. Until this point the data analysed showed that building relationships between teachers and educators (e.g. Joyce's relationship with Michelle, or Amy and Anna's relationship with Michelle) contributed to the success of the interorganisational collaboration. That kind of pattern comprises one of the main findings of the research and is the base for the development of a model (*Individual Collaboration Continuum*), but before establishing a model the pattern needs to be tested. The negative, or counter evidence that is used for testing the finding is an educator's collaboration with a teacher which did not result in building a relationship. Moreover, this negative evidence contributed to the refinement of the model and the inclusion in the final version (see figure 7-1).

Karen's collaboration with Juliet

One example of a low level of involvement between the teacher and the educator was the interaction of Karen (teacher) and Juliet (educator) for Cherry Tree Primary class 2 (Yr1 & Yr2 pupils) summer visit to Wakehurst. I have already described issues arising from this visit that was based on the topic of Habitats (on p.194), i.e. the teacher did not have enthusiasm for the school visit, and she did not get involved in the planning, she even avoided having a planning meeting on the phone. As a result the visit was not well organised, and one of the activities, the story stick trail was a repeat for the same pupils who did the same activity earlier that year. Also, during the actual visit there was a lack of coordination, some difficulty in keeping pupil discipline, and little enthusiasm on the part of the parents accompanying the pupils for the visit. However, despite these issues, the pupils seemed to enjoy the visit. The volunteers, Stewart and Emily, who can be regarded as a valid source for evaluating the visits because they have long and wide range of experience in assisting school visits, and with different educators, expressed their point of view on the visit:

> **Stewart:** there didn't seem to be a pre-agreed programme, and Juliet said her attempt to contact the school to agree a programme was not a success. She couldn't actually find anybody to talk to her. I think to some extent the staff of Cherry Tree Primary are so confident of what will happen when they come that they don't really need to spend a lot of time planning it. Maybe it's gone too far I think somebody should at least have made contact but when we sat down first thing this morning at the volunteers room there wasn't any programme other than, we had a fair idea, From my point of view, I do like a formal briefing of what is going to happen. I like a timetable and you probably noticed on a number of occasions Emily and I left like 'what next? We just didn't know. We didn't know where to go, or what to do or, which is a very strange situation (Interview with Stewart, 11/6/2007).
>
> **Researcher:** would you say that there is any kind of special relationship with the school?
> **Emily:** I haven't noticed it. I think there should be, but I haven't noticed it. I didn't think the teacher communicated with Juliet very well.
> **Researcher:** so if I ask you to spot a good relationship of a school with Wakehurst what would you say generally?
> **Emily:** the teachers know what we are doing and therefore they are more involved, and they get the parent helpers to help not to stand [around].

Researcher: do you think today they didn't help much?
Emily: they didn't do anything. The mothers didn't do anything, until I suggested that we had a mother with each group. They were not very well prepared. They didn't know what was expected of them. Had they been told by the teacher what was expected of them? Did they think they have just come here to be here? To make up the numbers of adults to children? Because schools that come here often, the teacher knows exactly what is expected of her and the adults.
Researcher: so why do you think this happened today?
Emily: I don't know. Perhaps there wasn't a meeting between the teacher and Juliet, beforehand (Interview with volunteers, 11/6/2007).

The volunteers identified the communication issues between the teacher and the educator and the consequences arising. It must be noted that the above example of collaboration (or lack of) shows that problems can also arise because of what educators do or do not do. The failures that occurred during the specific visit should be attributed to both teacher and educator. The teacher decided not to have a planning meeting, but the educator did not take enough responsibility to organise the visit as well as she could have done, as the volunteers indicated in the above excerpts. The volunteers' interviews in fact emphasised a variety of factors that can influence the success of collaboration according to the literature (Mattessich & Monsey, 1992; IMS, 1996), which were lacking from specific visits: mutual respect, understanding, communication, concrete goals and objectives, members sharing a stake in both process and outcome, and the development of clear roles and responsibilities. Karen's collaboration with Kelly showed that the lack of these factors contributed to the failure of this piece of collaboration. In Chapter 6 (p. 195) I have already commented that the failure of the specific collaboration was also related to the educator's lack of organising skills and the teacher's lack of professional experience.

At the end of the year, Karen requested fewer visits, and only if they contributed to a science topic that the pupils were studying at school at the time. It can be argued that Karen supported a rather neo-experiential approach to experience (Roberts, 2008), that is the environmental learning experience in the gardens is valuable as long as it fulfils the science curriculum content standards. Her collaboration overall did not seem to involve a relationship with any particular educator with whom she would work and communicate, let alone enjoy. Furthermore, I did not find that she would contemplate requesting a specific educator afterwards. Possibly she had not found her 'match' (see elaboration of what a good match means on p.239 'An overview of Joyce's collaboration with Heather and Michelle).

7.4. Towards a model on individual collaboration

Reflecting on the stories of individuals collaborating across the organisations, I will now summarise differences and similarities that they share. These differences and similarities are positioned in an *Individual Collaboration Continuum* (figure 7-1).

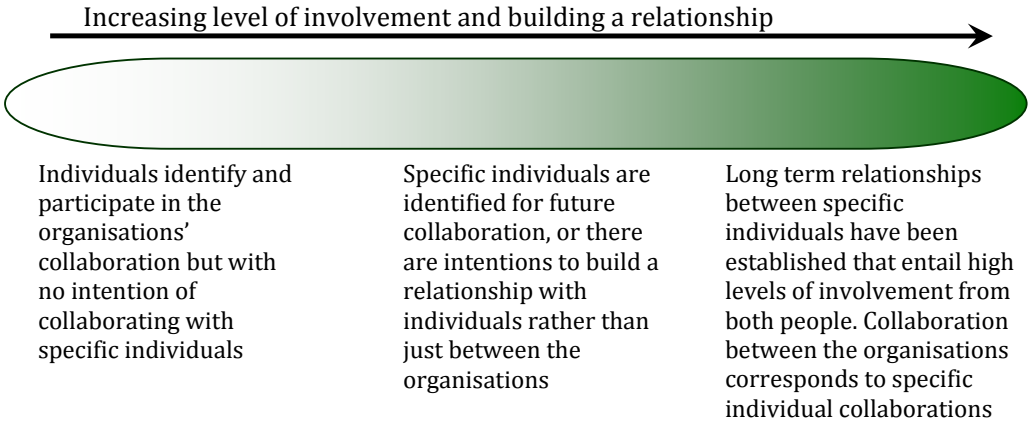

Figure 7-1 Individual Collaboration Continuum

The model aims to explain successful interorganisational collaboration on the basis of high involvement of members across the organisations, and the development of relationships among them. The lighter (green) end of the model corresponds to examples such as Karen's work with Juliet (see p.210) where there was little interaction and the collaboration was not very successful. Similar stories include the collaboration of John, Cherry Tree Primary class 3 teacher, with Kelly (see p.193), a Wakehurst educator, and Ariel and Cecilia, the Elm Tree Primary teachers, with Juliet (Wakehurst educator and also a part time teacher at Elm Tree Primary) (see p.172). The next stage of the continuum (darker green) consists of examples where teachers identify specific educators with whom they wish to collaborate and there are common characteristics between them, such as the example of Mark with Margaret (see p.248), and Esther with Kelly (see p.249). Although Esther did not directly suggest that she was contemplating collaborating with Kelly again, because of their common characteristics, I could identify some common of these such as a shared pedagogy when teaching younger pupils, their enthusiasm, and a shared focus on creativity. At the dark (green) end of the continuum the educators and teachers are highly involved in developing the collaboration and this involvement is based on specific characteristics they identify in each other's personality. The result is they end up building a long-term relationship.

It is clear that the professional relationships developed, for example between Michelle and Joyce (see p.231), is of the same importance and value as their personal relationship, that is, friendship. Similarly, the relationship developed between Michelle and Anna (see p.242) is based both on professionalism and friendship. The important point is that, in each of these cases, the teachers and educators have developed familiarity, share common characteristics, complement each other, and by working together develop creative activities for the pupils in the gardens. Both relationships are placed at the same darker (colour) end of the continuum in figure 7-1. It should also be noted that the development of close relationships between members across organisations enables them, where necessary, to bypass the organisations' set structures, using individual agency to act in more innovative ways. For example, the teacher and educator who have developed a relationship are willing to work together to go beyond the formal activities of the learning programme, and develop new activities from scratch. As a result the learning programme is enriched. Another benefit from the development of these personal and professional relationships is that the teachers are eager to encourage colleagues (including those from other schools) to visit Wakehurst and experience the innovative activities they developed in collaboration with the educators. As explained previously in this chapter (p.235), Joyce encouraged a teacher from Sycamore Tree Primary, another local school, to organise a visit on shelter building which she had created in collaboration with Michelle. Furthermore, in the collaboration of Kelly and Esther, Kelly arranged to use the Wakehurst minibus to transport the Reception class pupils. Without this, transport costs would have been prohibitive for the visit to have taken place. This is evidence of the flexibility and good will of the collaboration, other factors reported in the literature as contributing to collaboration success (see Mattessich & Monsey, 1992; Thorkildsen & Stein, 1996).

The collaborations between teachers and educators positioned at the darker (colour) end of the continuum (figure 7-1) are also characterised by very good communication both formal, i.e. during the allocated time for the planning meetings (either face to face or on the phone), and informal, i.e. communication happening outside of work hours and incorporating ideas that the individuals have for improving the collaborative activities. Conversely, collaborations between teachers and educators positioned at the other (colour) end of the continuum are characterised by difficult communications which contributed to the lack of success. The communication issues included lack of planning meetings, or, when the planning meetings did happen, misunderstandings between the educator and the teacher with expectations that were not met during the visits. The

importance of open and frequent communication, and establishing informal and formal communication links have been all suggested as contributing to the success of interorganisational collaboration in the literature (Mattessich & Monsey, 1992; IMS, 1996).

Planning meetings are clearly an issue in the success or otherwise of collaborative relationships between teachers and educators. The case study descriptions presented earlier (Chapter 5, p. 164) explain that some Cherry Tree Primary teachers had chosen not to have face to face planning meetings or phone planning meetings with the educators. This decision indicated their level of confidence with the educators as they knew what to expect from a visit due to previous collaborations. Given the success of previous visits, they were confident that quality activities would be provided by the educators, even if they had not planned the activities together. Their decisions were also justified on the argument that their heavy workload in the school did not allow them time to devote for planning meetings with the educators. However, Joyce's collaboration with Michelle, and Anna's with Michelle, provide evidence that teachers can overcome the time restrictions and find time for meetings. Anna had a face to face planning meeting at Wakehurst, and Joyce while not going to Wakehurst for a meeting, had an extensive planning meeting with Michelle on the phone that lasted longer than some of the face to face meetings. Although the time restrictions and the general pressures that the national curriculum requirements and Ofsted inspections impose on the teachers should be acknowledged. Anna's and Joyce's examples show that it is about priorities that the teachers choose themselves. Clearly for Joyce and Anna the collaboration with Michelle and Wakehurst were of higher priority than it was for other teachers who avoided the planning meetings e.g. Mark and Karen. The crucial element was that the teachers had an enthusiasm for the collaboration as they had developed a personal relationship with a specific educator, or a 'match'. Devoting time for planning meetings was something that the teachers chose to do as they knew that it would be an investment that would pay off with high quality educational activities for the students. Therefore, barriers such as time and an overcrowded curriculum can be overcome if the teacher is committed to the collaboration with the educators.

Moreover, a higher level of involvement and the building of relationships between individuals is a decisive factor for success when Wakehurst and local schools collaborate. Bainer (1997) suggests it is important when proposing such models as possible predictor of success to clarify what success actually means. As mentioned before, the success of collaboration in my research was assessed both in terms of meeting the collaboration

objectives (learning accruing from the educational programmes) as well as levels of satisfaction from the participants in the collaboration. As such, it needs to be clarified that the darkening of shading (colour to colour) in the continuum depicts an increase in the level of involvement and the building of relationships between educator and teacher, the main organisers of the visit. As specific teachers establish a relationship and an enduring collaboration with specific educators from the gardens, innovative, creative programmes are more likely to be developed, a cross curriculum approach is more probable, and, apart from delivering a high quality educational experience to the pupils, these programmes may contribute to the improvement and expansion of the Wakehurst educational programme. High levels of enthusiasm from all the participants and a high degree of pupil focus and discipline have been observed during the visits when individual collaboration falls into the dark (colour) part of the continuum (figure 7-1).

In relation to pupil learning, higher quality educational experiences for pupils are also created when there is a strong relationship between educators and teachers who collaborate. In those instances more emphasis is placed on an interactive notion of experience (Roberts, 2008) as the environmental experiences in the gardens are carefully linked with the experiences in school, aiming to create a continuum of experience as valued by Dewey. My research does not have evidence that shows that pupils learn more, or learn better, or that their experiences are more memorable when teacher – educator collaborations entail intense involvement from both parties. That is an issue that merits further research, preferably longitudinal, focusing more on the quality of impact that these collaborations have on pupils. This issue may be identified as a limitation of my study. Through more focused observations and questioning of the participants, especially pupils, I might possibly have identified whether the pupils placed more value on visits which were the result of close collaboration between their teacher and the Wakehurst educator (Michelle and Joyce) in comparison to visits where the teacher and the educator had little communication before and during the visit (example of Karen and Juliet). I should explain, however, that, in order to get that kind of data and evidence, it would be necessary to investigate long term relationships between botanic gardens and schools where the pupils have the opportunity to visit the gardens every year throughout their life in the primary education, and usually more than once every year. Clearly though, careful planning (irrespective of the context) will result in better learning opportunities for pupils.

A Comment on the success of the collaboration

One of my assumptions when I developed the idea that successful collaborations accrue from high-involvement of individuals and the building of a relationship between them, was that I would find a difference in the impact these collaborations have on the pupils. As a participant observer I could identify differences between the visits in terms of i) the enthusiasm from adults with teachers more actively involved during the visit, and ii) pupils' behaviour being exceptionally good (not only because the activities were interesting, but also because the teacher was good at keeping discipline). Moreover, I expected to be able to identify different levels of impact through the interview responses from the pupils. For example, I expected to find that when the school visits are more innovative and the teacher-educator collaboration more intense and creative, then the pupils would express more enthusiasm about their experiences and possibly they may have learned more than in other cases.

My assumptions were not confirmed, however. Firstly, I did not find that pupils in higher involvement collaborations learned more than pupils during visits with low involvement collaborations. During my interviews, pupils in both 'low-involvement' and 'high-involvement' collaborations were able to explain what they had learned in respect to the learning objectives of the activities[26]. The teachers were not necessarily satisfied with that outcome, as in some cases, particularly in the low involvement collaborations, the teachers pointed out that they would have preferred a different focus or different activities for the pupils but since there was little communication and co-working with the educator that did not happen[27].

As an example of this, the Cherry Tree Primary class 2 summer visit to Wakehurst could be identified as a low-involvement collaboration between Karen, the teacher, and Juliet, the educator, and the visit turned out to have some organisation problems including a repeated trail activity that the pupils had experienced during a previous visit in the same school year. However, the pupils were able to identify knowledge from the visit that matched with the learning objectives of the activities, as the following quotes illustrate. The visit was planned on the topic Habitats and included a short introduction on the

[26] Issues about non-directed learning during the school visits will be discussed in section 8.3.1.
[27] It must be noted that in the low involvement collaborations the learning objectives were determined mainly by the educator while in the high-involvement collaborations they were determined by both educator and teacher

recycling practices at Wakehurst, camouflage activity, minibeast hunt, trail with story sticks and pond dipping.

> **Charlie:** we used sweep nets and swept through the grass with them to see what we can find. Then we would take the net after a few seconds, and check if there was anything in there, and if there was we told the educator and the educator would put her hand in and take it out, and then she would normally have a jar and she would put the creature in and then a lid on it, and then we would look inside to see what the creature was; and if we didn't know what it was we looked at our bug dials…then we were doing the pond dipping
>
> **Erica:** we had like spoons and then we dug around to see what we could find, and we found a springtail. I didn't know they existed
>
> **Researcher:** so how did you learn about them?
>
> **Erica:** I didn't really learn about them; I just looked at my bug dial. Well, I didn't look at my bug dial but a few of my friends did.
>
> **Researcher:** what is a bug dial?
>
> **Erica:** it's a thing that is round and then you can point the arrow it has all the words underneath just to get more information, if you think it is one of them then what you do is you have to tell your friends and then you push it back to the top (Interview with Cherry Tree Primary class 2, 14/6/2007).

Here, Charlie and Erica described the fieldwork techniques they practiced during the activities investigating terrestrial and freshwater minibeasts. The pupils learned how to use the equipment for capturing the minibeasts, and also how to use the identification keys. What is interesting in relation to how the pupils talked about their environmental learning experiences is that they highlighted the active way of learning through doing, learning in a real life situation, and the shared learning experience, the importance of which were emphasised in Dewey's experiential education theory (Dewey, 1938). Falk & Dierking (2000) suggest the value of the sociocultural context, and the factors 'within-group sociocultural mediation' and 'facilitated mediation by others' in learning in museums both of which are based on Vygotsky's sociocultural learning theory (1978). The pupils' accounts suggest that it was important for them that their environmental learning experiences were mediated by the educator who helped them during the minibeast hunt in the grass habitat, and also mediated by their classmates when they had to identify the creatures from the pond habitat. Erica gave a clear description of the learning process that also fits with the Lave & Wenger (1991) description of communities of practice. Erica explained that it was the co-participation in the activities which resulted in individual learning; she looked at the minibeasts from the pond, and she learned the name of the creature from her friends who used the identification key, and she suggested

that when someone gets to know the name of the minibeast it is important to inform the other members of the group as well. Moreover, Burbules (2004) has identified interaction as one of the processes of engagement through which individuals immerse in an experience, and in this example it can be interpreted as interaction with others but also as embodied action in the environment, using the equipment and investigating the minibeasts in their habitats.

An example of a school visit that included high-involvement of teacher and educator (Michelle with Anna and Amy) is Oak Tree Primary's Yr6 class summer visit to Wakehurst. The topic of the visit was Habitats and adaptations, and the activities organised included a trail following the watercourse at Wakehurst and looking at animals' habitats on the way, pond dipping, minibeast identification, a terrestrial minibeast hunt and comparing habitats. During the interview the pupils were able to identify the knowledge that corresponds to the learning objectives of the activities.

> **Ivy:** we found the bats. Michelle was telling us how to find where the bats live. There is a bat line because of their excretions on the tree
> **Girl:** I learned pond dipping
> **Craig:** I learned that there is much more life in a pond than I thought so
> **Violet:** there were a lot of pond skaters and water boatman the great one
> **Jasmin:** I learned how to get them, cause Michelle told us
> **Brian:** you have to do it like an eight or a circular thing
> **Brad:** if you collect something in your net and you pull it the other way it throws it out again
> **Violet:** I learned what sort of species are in the weeds and what sort of species live in the surface, two people did it on the surface and two people did it on the weeds…it was interesting to know how many different types of species were
> **Craig:** you picked them mainly and you put it under the microscope and you look at it and you look at the identification cards
> (about the minibeast hunt) **Craig:** so many things living in the tall grass I've never seen them, we found them by sort of sweeping those, much more than I expected
> **Brian:** we found lots of things in the meadow. We hardly found anything in the trees.
> **Brad:** the things in the meadow, bugs in the meadow and bugs in the trees have adapted to life in their place. These in the meadows used to go in the long grass and they have camouflage, and those in the trees most of them that we found on the trees had wings (Interview with Yr6 class Oak Tree Primary, 27/6/2007)

In this instance the pupils gave very detailed accounts of the creatures they identified and the processes they used, showing that they acquired both new skills and new knowledge

from the activities at Wakehurst. The environmental learning experiences were interesting because they changed pupils' previous perceptions; for example, they learned that ponds are habitats of far more creatures than they thought before. Burbules (2004) suggested that an experience is interesting for participants when it encourages the individual to find out something new from a familiar environment which in this case was the pond environment. The pupils emphasised new learning based on the comparisons they made and their appreciation of the biodiversity all of which were the results of direct experience in the environment. Observation and comparison are fundamental elements of the scientific process which the pupils clearly practiced in this real life situation. The pupils' description of their environmental learning involved the educator mediating their learning, telling them where to focus their attention, giving them information and showing them how to use the equipment. This learning process, as described by the pupils, is congruent with scaffolding, Meadows (1998), the social mediation process during which adults help the young people to learn how to acquire new knowledge. Michelle did not directly inform the pupils about the variety of species living in the pond, but she taught them how to sample the minibeasts and identify them so that they would acquire further knowledge themselves. An interactive approach to experiential learning (Roberts, 2008) fits with this example (and with the example from the Cherry Tree Primary pupils above) according to which the experience involves pupils' interaction with the environment and with their friends and the educator.

The examples above illustrated that the learning objectives of the activities during a school visit were met in both cases i.e. when there was low involvement between teacher and educator for organising the visit (example 1), and when there was high involvement (example 2). Furthermore, elements that the pupils highlighted about their visits to the gardens were the experience outdoors, learning as being fun, and especially learning in a different way from which they do at school i.e. sitting in a classroom. Pupils expressed their dislike, especially when the teaching was done indoors or when activities were similar to activities they had done on previous visits. They appreciated seeing Wakehurst in a different way from what the general public normally do, when for example, they go to Wakehurst with their parents, and they enjoyed activities in private parts of the gardens. As mentioned earlier, I was unable to find convincing data indicating that higher involvement collaborations have a greater impact on pupils, with higher levels of learning and long term impact and strong memories. However, an important point is that what counts as successful from the adults' point of view, may not be what counts as successful for the pupils. There is no doubt that the pupils have different expectations of a visit than the educators, teachers or volunteers. That point was clear when I asked pupils from all

the year groups to tell me what they had enjoyed most about the visit, and, despite the educational focus which is usually the adults' concern, they mentioned the experience outdoors, looking at the ducks, having lunch, and having a run around. In doing so, the pupils emphasised an embodied perspective of the experience (Roberts, 2008) in the gardens according to which what matters is what is happening at the time of the experience and not what happened before or after and the role of the senses and the emotions are particularly important. Furthermore, pupils' comments show that they value the more free-choice elements of the experience during a school visit at Wakehurst, following their own interest, having choice and control over the activities, and enjoying the experience with their peers especially during lunch time as they have the opportunity to play on the big fields of the gardens. All these factors have been also mentioned in Falk & Dierking's (2000) Contextual Model of Learning within the individual and sociocultural contexts as significant for free-choice learning in museums.

Links of the *Individual Collaboration Continuum* with the literature

The data presented in Chapter 7 indicate that more attention and value should be paid to individual collaborations as these may be major drivers of the success of collaborations between organisations. The literature on organisational collaboration has focused on membership issues suggesting that who is involved in a collaboration is a factor in gaining collaborative advantage (the organisations achieving more than they could if they were working on their own), and that involving key stake holders in the collaboration is important (Huxham & Vangen, 2000).

It should be also noted that the use of the term membership in interorganisational collaboration literature often implies both individual and organisational collaboration (Huxham & Vangen, 2000; Mattessich & Monsey, 1992).

> Membership characteristics consist of skills, attitudes, opinions of the individuals in a collaborative group, as well as the culture and capacity of the organisations which form collaborative groups (Mattessich & Monsey, 1992, p.19).

Huxham & Vangen (2000), taking as a given that membership is a factor contributing to the success of collaboration, explore membership in practice. They suggest that the meaning of the term member is dynamic, complex and ambiguous, and that membership status changes over time. Their argument is that there is a lack of clarity about who the

members of any collaboration are, which is caused by ambiguity over the status of members, over the relationship between individual and organisational members and over the source of members' representativeness. Roberts & Bradley (1991) argue that having explicit membership where the parties know and agree on who is involved and in what capacity is crucial if an interorganisational collaboration is to be successful.

The degree of individual involvement in a collaboration influences the role and responsibilities of each member. My research suggests that the deeper the involvement becomes, the more clarity is achieved. When, for example, Michelle collaborates with Joyce they have a clear idea of what responsibilities each one has during the visit and that results in well coordinated activities. The detailed planning meetings between Michelle and Joyce, during which they co-create the activities, contribute to the clear allocation of tasks. Furthermore, other factors that contribute to the explicit distribution of roles and responsibilities are that Michelle and Joyce are very experienced professionals, they both have high quality teaching and communication skills, and they have developed a good understanding of how each other works. Conversely, when there is little involvement the roles can be ambiguous or confused, and individuals may have expectations that they have not discussed with each other. Indications of the lack of involvement in planning are issues of pupil discipline during the visit, no clear appointment of roles and a lack of information about the plan of the visit. For example, in the Cherry Tree Primary class 2 summer visit, described above, pupil misbehaviour was noticed by volunteers and the educator. In a well defined collaboration it is the teacher who is responsible for pupil discipline because they know their pupils better, and have their own methods of establishing discipline, which is familiar to the pupils. The educator is responsible for the teaching. That clear definition of roles is established during the planning meetings. Misunderstandings in relation to roles and responsibilities can be also related to the abilities and experience of the teacher and educator. During the Cherry Tree Primary class 2 visit, Karen, the teacher, was newly qualified so she lacked teaching experience, including effective ways of establishing pupil discipline. She also lacked the ability to collaborate efficiently with the educator. The educator lacked organisational skills which had an impact on how well she could have encouraged the teachers' involvement in the collaboration and clarify what the teacher had to do before and during the visit. Moreover, as Mattessich & Monsey (1992) point out, research evidence relating to factors that contribute to collaboration success, indicate that membership characteristics such as mutual respect, understanding, trust, and an ability to compromise are all important. All these characteristics were identified in the collaborations that had high involvement between the individuals, and was evident throughout the collaboration process from the

planning, where discussions and negotiation on the content of the visit were taking place, to the actual day of the visit.

In the literature review (section 3.2, pp.46-51) I have discussed other models of collaboration which suggest a range of interaction modes between organisations. Cobb & Quagglia (1994) distinguished two strands of thought in the interactions between schools and businesses in rural America: the partnership domain that involves the organisations focusing more on establishing a well defined interorganisational structure and the relationship domain focusing on developing associations between individual participants. Hord (1981) investigating the interaction between an educational research centre and schools of a district in the USA suggested two modes of interactions, the cooperation mode and the collaboration mode, with the level of involvement and interaction between the organisations stronger in the latter. King (1998) proposed a continuum of the partnership structure to explain different kinds of interaction between museums and schools in an innovative museum – school project. This model suggests that the strength of partnership increases as they move from one end of the continuum – cooperation – to the other end – co-creation – (for more details on the model see section 3.2. p.50).

These models, as has been noted, do not argue that moving from one of end of the continuum to the other means that the outcomes of the collaboration will be more successful, but they do argue that the participants should clarify which form of interaction they will pursue and then form respective expectations about the outcomes of the collaboration. It is also suggested that more research is needed on the outcomes of the different modes of interactions and whether there is a variation in the success of the collaboration, where the meaning of success is clarified. My research has clarified what success in the collaboration between botanic gardens and the local schools means, and has focused on the factors that influence this success. In particular, the *Individual Collaboration Continuum* suggests that when interorganisational collaboration focuses more on developing individuals' relationships then the collaboration will be more successful. Organisational structures are still important. However, they should play more the role of supporting individuals across the organisations who share common characteristics and interests, who may then develop a relationship which will enable the collaboration to flourish for the benefits of the organisations and learners.

7.5. What happens if membership changes: an issue for further consideration

Having placed so much emphasis on membership and individual collaboration, it is important to raise issues in relation to membership changes. Huxham & Vangen (2000) speak of the structure of interorganisational collaborations as continually changing partly because of external pressures and changes within the organisations, which have a direct influence on who can and should be a member partly because inevitable changes to the purpose of the collaboration imply different membership needs. Individual changes also have an influence on membership. Often because of role changes within organisations, or career moves to other organisations, or the ending of contracts, individuals stop acting as an organisation's representative in a collaboration. New representatives are appointed as a replacement in the collaborative group in these cases, but sometimes the whole organisation leaves the collaboration on the representative's departure. However, sometimes, if a member of staff of one of the participating organisations is appointed to a position for which the collaboration has special relevance, role changes may bring additional people into the collaborative group.

In the collaboration of botanic gardens and local schools, an emerging issue is what happens if teachers or educators or other staff leave or change positions within the organisations. My research does not provide enough evidence to fully answer that question. However, I have gained some insight. Richard, the head of Wakehurst arboretum unit explained the motivation to instigate educational collaborations between Wakehurst and schools.

> **Richard:** Sometimes it (collaboration) can be generated just because someone who works at Wakehurst has children who go to that school. For instance my son is going to go to Wivesfield Green school, and so they are moving into a new school in September and I am getting involved in the landscape planting trees and that sort of thing. Now, I am doing that because my son is going to go to that school and I want that school to look good for my son to enjoy; so I suspect that Wakehurst through me will start to have a much better working relationship with Wivesfield Green**.** As soon as my son leaves that school the chances are that I will probably go. It (collaboration) depends on individual's enthusiasm and energy. Which I think is good (Interview with Richard, 21/3/2007).

As pointed out earlier, when members of the organisations see the collaboration as benefiting their self interest that will become a factor influencing the success of the

collaboration. Richard has also emphasised the importance of informal links to the success of Wakehurst – school collaborations, i.e. pupils' parents who may work at Wakehurst. IMS (1996) suggested three levels of involvement in school – museum collaboration: 1) educator and teachers, 2) administrators, 3) parent and community. The informal links act within different levels of involvement as there can be parents who are also staff in the museum/gardens and can act as ambassadors for the interorganisational collaboration. Conversely, when individuals lose their self interest from the collaboration then the collaboration may cease. In such cases, the only chance for the future of the collaboration is that some of the school teachers or the head teacher will become more acquainted with Wakehurst and, by becoming enthusiastic, will decide to keep the links with the gardens.

When Michelle explained that she would trial new activities with schools where she has a relationship with the teachers or head teachers, I asked if she would still contact the same schools if the people she knew had left the schools:

> **Michelle:** ehm, probably; unless if somebody else appeared in another school. It's easier to contact somebody you know, than just a school; so Turners Hill probably all the teachers that I know there are just about to come out for retirement, so it's perhaps the school that I shall lose that link with them. Anna (from Oak Tree Primary) is not moving, so I would always use them, and I'm sure if Joyce (Cherry Tree Primary) moved, I'd get to know somebody else there anyway. But the other thing is, those schools also haven't got an issue with transport, so, you know that you can get them. You know if you want to try something out on them, it's not going to cost them anything at all and Oak Tree Primary they all come by car, Cherry Tree Primary they all walk, and Turners Hill is pretty much the same as Oak Tree Primary. They've got a load of mums to ferry them. So, you could fit them in quite quickly if they can do that, because you don't have to hire coaches. So I think it is a very personal thing isn't it really? (Interview with Michelle, 25/6/2007).

Michelle identified her personal relationship with the schools as a primary factor for choosing them, but also that her personal links in a way guarantee a continuation of a relationship with the school even if the teachers leave the school. She adds the transport issue as another important factor influencing a collaboration as it enables the schools and the teachers to come to Wakehurst with minimal cost. Low transport costs in some cases come first as this enables more frequent interactions and consequently more stable, continuous collaboration between individuals. Richard has also commented on building a more stable relationship with individuals from the schools when he suggested that it is

easier to build a school project such as Wild View with smaller schools which usually have teachers who have worked at the school for many years. In bigger schools, with more supply and part time teachers, and more staff change, it is more difficult to engage teachers to participate in projects which have a potential for more long term collaboration.

When I met Marie, who once taught at Cherry Tree Primary, and in a way initiated the first contact of the school with the gardens working together with Jean T. (head of the learning programme), she explained that when she changed schools she kept the liaison with the gardens so she continued her collaboration with Wakehurst by bringing the pupils from the other schools where she taught. That kind of change can be perceived as positive especially in the case where the teacher was able to link Wakehurst to her new school thus widening the number of schools involved in a collaboration. It is to be hoped of course that, when the teacher left her previous school, the collaboration with Wakehurst was well established and, therefore, continued.

Further research is needed to examine the above assumptions and, also, to identify factors that give opportunity for interorganisational collaboration to survive when key members of the organisations leave. That kind of evidence may possibly be found when investigating long term individual collaboration, but also by tracking the history of collaborations.

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Chapter 7 began by telling the story of Joyce, a Cherry Tree Primary teacher, and Wakehurst educators Michelle and Heather. Joyce had built a personal relationship with both educators requesting them every time she collaborated with Wakehurst so that the success of the collaboration might be more guaranteed. Joyce shares common characteristics and interests with Michelle and Heather such as creativity, enthusiasm for the collaboration, a cross-curriculum approach in her teaching style and, since there is continuity in their collaboration, they have established their own way of working together, complementing each other, and becoming highly involved in the projects they undertake (Joyce with Michelle and Joyce with Heather). Interaction with both educators entails innovative activities and high quality experiences for pupils. Joyce's two examples of collaboration have been placed at one end of the *Individual Collaboration Continuum* (model 2, figure 7-2), a model that explains the success of interorganisational collaboration based on building individuals relationships. Other such relationships

resulting from the collaboration of Wakehurst with the three local schools were also explained, and identified in the model, which, at the other end of the continuum, represents less successful collaborations. Such collaborations can be distinguished also by the failure of the participants to instigate or maintain individual relationships. The *Individual Collaboration Continuum* needs to be seen in relation to the *Collaboration Double Loop* (model 1, figure 7-2), a model that explains the success of collaboration based on the history of collaboration. Success is based on a previous positive history of collaboration that creates trust amongst the participants for their future endeavours. The transition from the first loop, which focuses on the organisational level, to the second loop, which focuses on individuals, requires the teacher and the educator matching with each other. This kind of match is elaborated by the *Individual Collaboration Continuum* model. These models have been brought together on the next page.

During the data analysis and the development of the *Individual Collaboration Continuum* other factors that influence the collaboration, apart from the relationships between teachers and educators, have been identified, i.e. self interest, good communication, a flexible structure, clear goals and responsibilities, a shared vision, informal links, and commitment. Furthermore, the teachers' and educators' professional and life experiences, their skills, their confidence in teaching outdoors, how they value outdoor and environmental education, and how they manage to fulfil national curriculum requirements with their workloads, were also factors influencing their collaboration and the environmental learning experiences they were offering their pupils. As far as the environmental learning experiences are concerned, two perspectives were identified in the analysis, (i) an interactive perspective of the experience, and (ii) a neo-experiential perspective. These perspectives will be further explored in the next chapter. Different processes of engagement through which pupils may immerse themselves in the environmental experience were also explained, i.e. interest, involvement, imagination and interaction. Other factors influencing pupils' learning experiences were found such as sociocultural mediation and how the environmental learning experiences were relevant not only to the national curriculum and the school curriculum but also to the pupils' life in school and in the community.

The next chapter will address interdependency of the organisations as a reason for the collaboration to exist and succeed. The manner in which pupils' environmental learning experiences are influenced by the ways that the two organisations depend on each other will also be examined. In addition, whether and how botanic garden – school collaborations can successfully link environmental learning in school and in the gardens

will be discussed taking into account the factors that influence the collaborations. The analysis will also focus on environmental issues as part of pupils' environmental learning experiences, how they are addressed during the collaboration, and how they may be linked with learning in school.

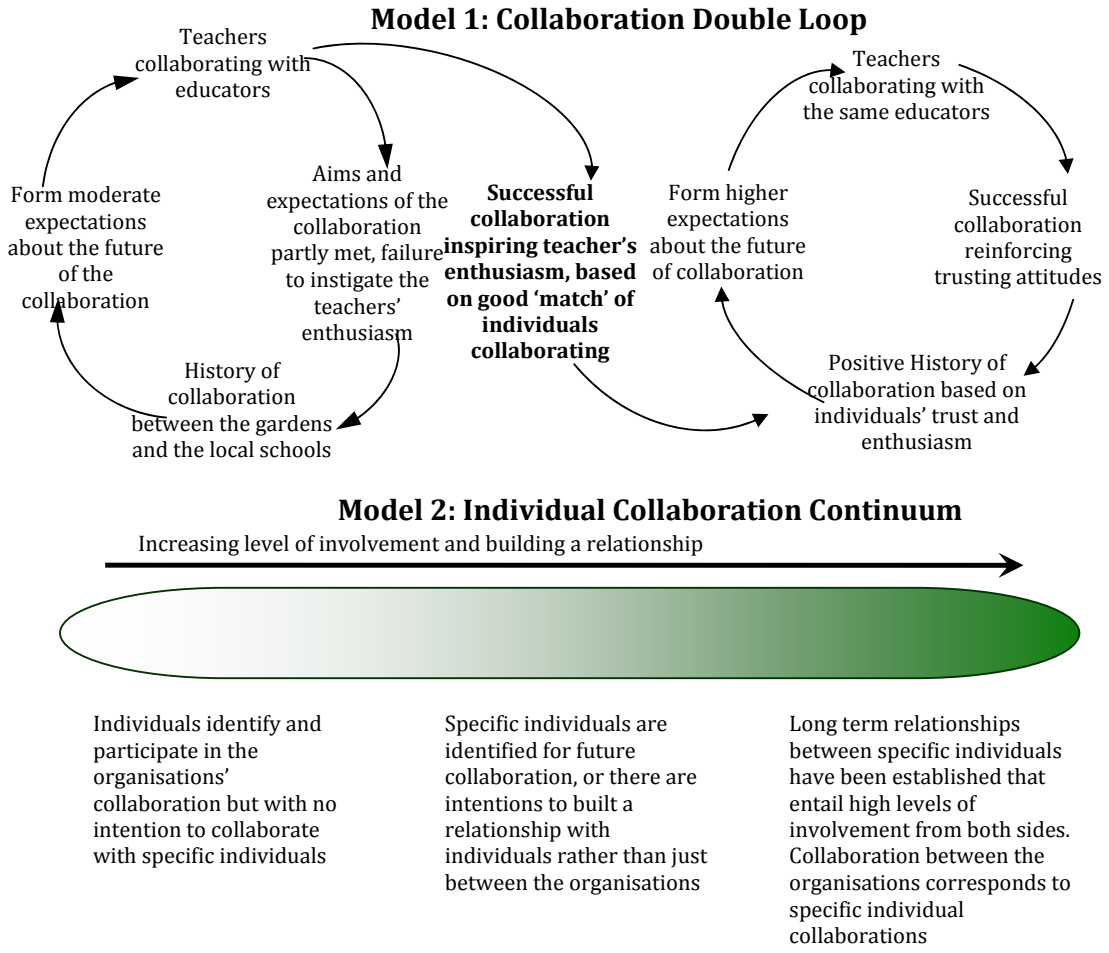

Figure 7-2 Overview of the collaboration models i.e. Collaboration Double Loop and Individual Collaboration Continuum

Chapter 8. Organisations' interdependency

⌘ Chapter Introduction

Evidence emerging from my research shows that the way that schools and botanic gardens are dependent on each other when they collaborate, influences the environmental learning experiences offered to the participants of the collaboration. It is important to understand the factors that bring the two organisations together in the collaboration, what kind of dependencies that collaboration implies, and the extent to which the interdependencies are acknowledged, negotiated, or even ignored. Interdependency will be presented in two parts, i.e. how schools depend on Wakehurst, and how Wakehurst depends on schools, but collaboration presupposes that both dependencies apply at the same time and are inherently linked. Having developed an understanding of the interdependency, and how it may influence pupils' environmental learning experiences I will use the factors that influence the collaboration as lenses to view whether and how they may contribute to creating links between the learning experiences in school and in the gardens. I then focus on how environmental issues are being addressed as part of the environmental learning experiences from teachers', educators' and pupils' perspectives. I explore how barriers to addressing environmental issues can be overcome by creating links between learning in the gardens and learning in school through gardens – school collaborations. Environmental learning experiences are not assumed to have a single, unified meaning for all the participants; rather, different conceptualisations of experience are identified.

8.1. What does interdependency mean?

The concept of interdependency, which applies when gardens and schools collaborate, entails organisations or individuals entering into the collaboration based on what they perceive they can gain, which means that they depend on each other for the same or different reasons. Also, in respect to the definition of collaboration, the organisations get together to achieve what they could not do on their own, or to achieve better than what

they could do on their own, thus achieving collaborative advantage (Huxham & Vangen, 2005).

Interdependence, as defined by Bouwen & Taillieu (2004), is the mutually negotiated and accepted way of interacting among the parties with the recognition of each other's perspective, interest, contribution and identity. The question arising is how can different actors live with the differences as complementary contributions towards some common action pattern? Interdependency does not mean a consensus or an egalitarian treatment; it means an actionable set of activities which actors can be part of so that their specificity in terms of contribution and identity can find an acceptable level of fitting together. Wakehurst and local schools have a common goal to educate whoever the audiences are (teachers or pupils) and they recognize various ways in which they depend on each other. Figure 8-1 presents ways in which schools and Wakehurst are interdependent, and can be used as a map to guide the reader through the analysis that follows. The first part of this chapter breaks down interdependency into how schools depend on Wakehurst, and how Wakehurst depends on schools. It needs to be noted that, although, the dependencies will be presented separately, the collaboration prerequisites are that the organisations depend on each other in the same or different ways at the same time.

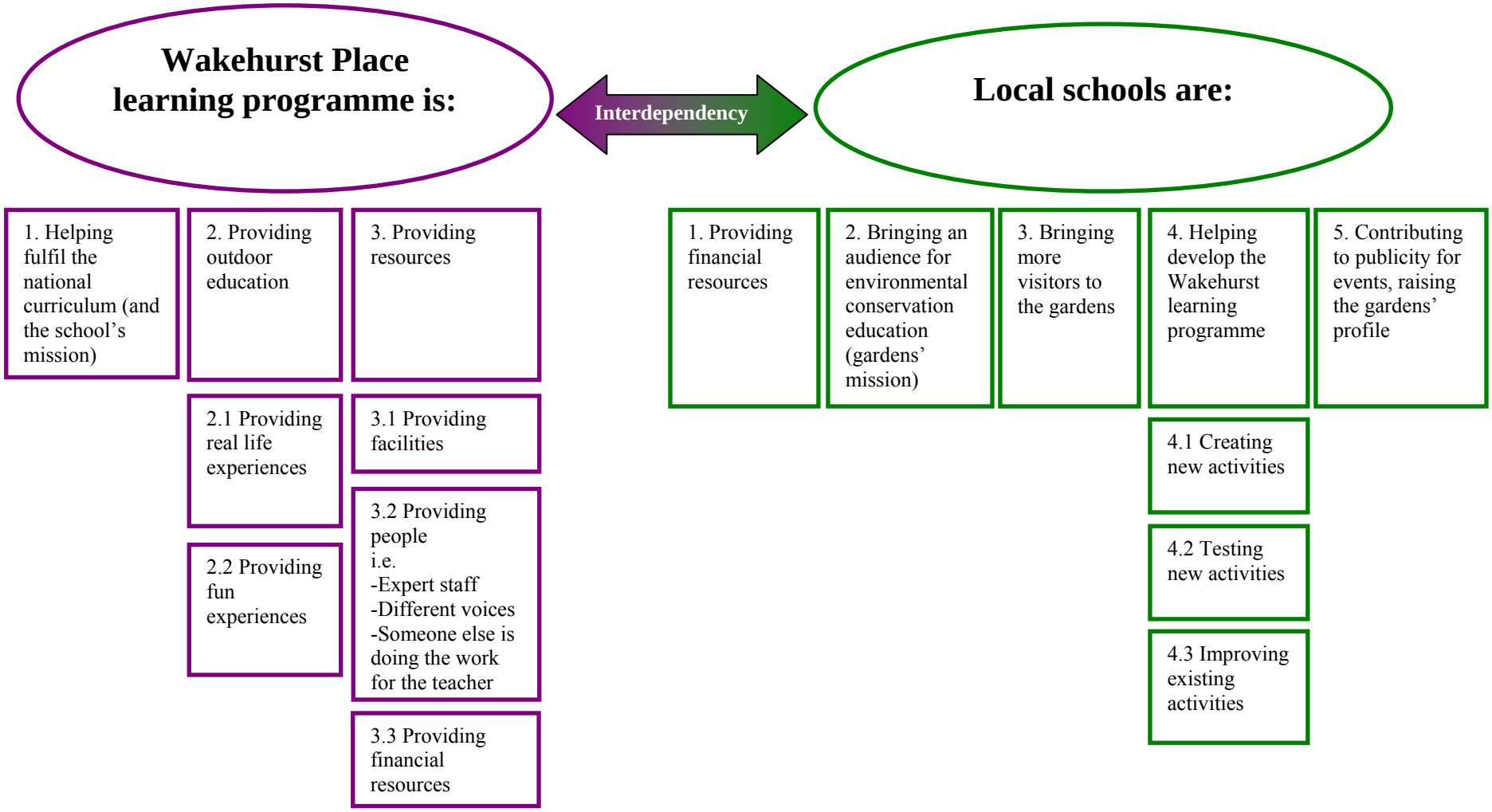

Figure 8-1 Dimensions of Wakehurst and the local schools interdependency

8.2. How schools depend on Wakehurst Place

Wakehurst, as an outdoor education setting, is complementing the needs of the schools. As schools in Britain are extremely busy organisations it is imperative that botanic gardens, in order to attract their visitors, should offer what schools are lacking or those facilities which are better provided at the botanic gardens thus enabling the schools to meet learning targets. This function is essential for the development of a mutually-beneficial relationship between the gardens and the schools.

8.2.1. Resources

Facilities

Wakehurst offers facilities that schools lack or which are better than those offered at school. Even if, for example, the school has habitats in the school grounds, trees, a pond and equipment for pond dipping, Wakehurst can offer more variety, habitats that are more rich in biodiversity, better resources, expensive equipment like microscopes, and unique scientific facilities that can be used for educational purposes, such as the Millennium Seed Bank and the field studies centre. The quality of Wakehurst resources has been noted by all participants in the research: teachers, educators, volunteers and pupils. Burnard & Swann (2010), in their research on the collaborations of schools with musicians, reported the significance of physical contexts for learning. The musicians selected sites for music workshops at places that would inspire and support pupils' learning, removing the structure of the school environment. As a result, the out-of-school sites enhanced pupils' participation and their engagement with the creative process, and gave authenticity to their experience of learning. In a similar way the Wakehurst facilities not only offer equipment that schools lack, but also the physical places that can stimulate pupils' environmental learning experiences, provide the authenticity in a real life context, and are different from the classroom's structured environment.

People

The fact that Wakehurst has specially trained educators organising and leading visits is a decisive factor in the success of the collaboration with schools. The expertise of the educators is acknowledged by teachers. Some teachers commented that they themselves 'didn't have enough subject knowledge' (Karen, Cherry Tree Primary teacher, 4/10/2006) to lead a visit to Wakehurst and so it was essential that those specialist plant science educators were doing the teaching.

It is also appreciated that the pupils are being taught by someone different at Wakehurst. In primary education, pupils are taught mainly by one teacher, so when they go on trips they have the opportunity to be taught by experts. Joyce, a Cherry Tree Primary teacher, argued that teachers could replicate what is offered by the outdoor education settings such as botanic gardens – meaning that schools can operate independently – but she also commented that it is important the pupils to be taught in different contexts that are complementary to what is offered at schools.

> **Joyce:** I don't think it hurts to do things elsewhere (other than school classroom) having different voices saying it. It's not an activity that we couldn't do in class; it's an activity that doing it somewhere else can make a difference…I think as teachers, we could go and do almost anything that is done there (at Wakehurst) if we put our minds to it, and we set our hearts on that; but I don't think that this necessarily helps, if the same person always (teaches). I think that the reason the trip is so great is that a different person talks to the kids…only my voice … can be a little bit monotonous; if it's the same voice, it's like the mother's voice…, they stop listening. They have to have some variation so... I just think it's healthy not to just think I am …the only person that can teach them (Interview with Joyce, 3/11/2006).

Moreover, the teachers appreciate that someone else is working with them, preparing and delivering lessons that would have 'taken a lot more effort to do' at school (Mark, Cherry Tree Primary teacher, 15/3/2007), and where the teacher has 'the opportunity to step back and observe the pupils in a different environment and a different way of learning' (Joyce, Cherry Tree Primary teacher, 26/9/2007). Dillon *et al.* (2005, p.31) also pointed out that, during visits to outdoor education settings, the teachers

> felt they benefited from being able to observe their students while they were being taught by the outdoor educators, as they were able to learn more about the children – how they reacted and interacted and how much knowledge they had acquired.

The ways and degree to which each school is dependent on the gardens is congruent with individual needs, strengths and weaknesses. For example, Elm Tree Primary has very good resources in the school grounds, i.e. a well established pond, a vegetable plot, big grounds and different habitats, a meadow and woodland areas. However, these resources are not often used. A Elm Tree Primary teacher said that she would like Wakehurst educators to come to the school more often and work in the school grounds with the pupils, indicating perhaps that the school may lack expertise in the use of its grounds. Also, the same teacher noted that she wanted the pupils to visit the Millennium Seed Bank when they visited Wakehurst because that is a resource that the school lacks. Cherry Tree Primary teachers and pupils particularly appreciate that the big grounds that Wakehurst offers are also valuable for play, as the school lacks extensive play areas. It was interesting to hear from Cherry Tree Primary pupils how much emphasis they put on play time at Wakehurst. Also, teachers commented that although they do have habitats in their school grounds, at Wakehurst there is more variety which does make a difference in terms of the experience offered to the pupils. If the educators know more about each school's particular conditions, e.g. resources they are lacking, or they want to develop, then through the collaboration they can focus on meeting that kind of need which, in turn can contribute to the collaboration's success. If the schools and the gardens have a stable, continuous relationship, then it is more likely that the educators, having collaborated with the schools before, know particular school circumstances, or are told about these by the teachers.

Access to resources (specimens, special environments and equipment), and to the expertise of the gardens educators, have also been identified in other research as an important reason to organise visits to other botanic gardens; for example, Stewart's (2003) research in the Royal Botanic Gardens Sydney. According to Titman (1999) the availability of well-designed facilities and curriculum-resource materials, were a challenge for many schools in terms of providing outdoor learning on the school site. Moreover, research on outdoor education provision (e.g. Simmons, 1998), and evaluation of outdoor education initiatives (e.g. Scott *et al.*, 2003) have pointed to teachers' lack of confidence and expertise in teaching and learning outdoors as barriers to outdoor learning opportunities for students. Wakehurst's provision of educators, together with the gardens' facilities, and the plethora of educational materials available for activities in the gardens, are essential for overcoming those kinds of barriers to outdoor learning provision. Additionally, the gardens provide professional development courses for teachers which aim to develop teachers' expertise and confidence in the use of their school grounds.

The allocation of a skilled project convener with organisational and interpersonal skills is also important as part of the human resources that support a collaboration (Mattessich & Monsey, 1992). Research also shows that a liaison between museums and schools will smooth project administration and communication (IMS, 1996). The administrator (Louise) is the person responsible at Wakehurst for the coordination of school visits and other educational projects. However, the schools lacked an equivalent post. Louise's job description mainly involved the facilitation of the collaboration of Wakehurst with schools, while school administrators occasionally dealt with issues related to the collaboration with Wakehurst, their main job was organising a variety tasks related to the school's everyday activities. At Cherry Tree Primary, this convener role was notionally held by the head teacher and Beth, a teaching assistant. In the other schools there was no person formally allocated to that position, but there were members of staff who took some responsibility. At Elm Tree Primary, Ariel unofficially took that responsibility with varying degrees of success as the role was additional to her full workload. At Oak Tree Primary there was not an appointed convener, and it was the head teacher and Anna who acted as the conveners in the collaboration with Wakehurst.

Financial resources

It has often been suggested by the research participants that a decisive factor regarding the regularity of school visits to Wakehurst, was the cost to parents of the visit which included transport costs and the fees for the gardens. In other words, schools could see that costs prohibited a lot of visits, which is an issue that will be further discussed in section 8.3.1 (p.300). However, what was not acknowledged, or perhaps understood, especially by the school teachers, was that part Wakehurst's learning programme budget went to subsidise school visits, which shows that the collaboration of Wakehurst with schools entailed the provision of financial resources from both partners. In the following excerpt the educators and the head of the learning programme discussed why they have made such policy decisions regarding funding the educational activities:

> **Zoe:** I have to say that in science curriculum there's very little that you can do as well in school as you can do here. I wouldn't do plant eater in the class because think how much you would have to buy. My school wouldn't have the variety of fruit and vegetables that we are able to buy at Wakehurst. To do that with my two classes, I don't think my school would cover me financially, because it would not be the science budget to cover it.

> **Louise:** But I was just thinking about what you were saying about the cost of the fruit and veg. That's not included in what we get from the schools here. So we are out of pocket for that as well here, aren't we?
> **Jean T.:** All of our school visits cost more than we get in as income so what the income does, is allow us to maintain the level, because the existing budget then tops up the planning visit time, your preparation time, and that's the way we have chosen to go so far (Discussion with educators, 24/9/2007).

Zoe was a part-time teacher in a primary school, as well as a Wakehurst educator, so she was able to understand the financial restrictions that the schools have which means that there is a limited budget for resources for each subject. Thus it is a motivation for schools and teachers to use outdoor education centres because they can provide resources not available or affordable in the school. As noted above, the resources which are made available to the schools means an extra cost to Wakehurst not covered by what the schools pay for the visits. Jean T., as the head of the learning programme, and who makes the policy decisions for the distribution of the resources, considers that it is vital that the best of the resources are provided despite the cost, as that will guarantee that the activities are attractive to the schools. Jean T.'s perspective on the costs and benefits of the school visits for Wakehurst prioritises the schools' needs in the Wakehurst budget. Kew Gardens, including Wakehurst Place, is the only botanic garden in England that receives government funding because of its international scientific and heritage significance. That means that it is easier to prioritise education spending over securing a financial surplus compared to other botanic gardens that have to cover all their costs. The point being made is that the way Wakehurst is financed, and the policy decisions favouring the provision of education are factors that contribute to the success of the collaboration. Given that the school visits are subsidised from Wakehurst's budget, possible cuts in the gardens' funding would have consequences regarding the financial support of the collaboration.

It should be also noted that, in order to encourage Cherry Tree Primary's frequent visits, Wakehurst had offered a discount on fees which the school teachers did not always seem to be aware of. In addition, projects such as Billionth Seed and Wild View, were provided to the local schools by Wakehurst at no cost as it was in the interests of the gardens that the schools participated in these projects. However, it was an incentive to schools that some projects, especially the Wild View directly aimed at pupils' environmental learning opportunities.

The literature has also shown that resources, financial and people, from both partners are important for a successful collaboration (Mattessich & Monsey, 1992; IMS, 1996). As I have illustrated in figure 8-1 resources are one of the factors that encourage the botanic gardens and schools to collaborate, and appropriate allocation of resources are required from both organisations. In terms of the gardens' resources that are brought into the collaboration, these are not just facilities and financial, but include people: educators, volunteers, administrative and other gardens staff.

8.2.2. Provision of outdoor education at Wakehurst

Pupils came to the gardens to participate in activities related to their curriculum or in other collaborative activities including the Wild View and Billionth Seed projects. The teachers, educators, pupils and volunteers all stated that Wakehurst provided first hand, real life experiences for pupils.

Elm Tree Primary Yr4 pupils explained how different from school learning at Wakehurst was:

> **Children:** you can actually see the stuff
> **Girl:** instead of just thinking what they look like. Instead of just imagining them.
> **Boy:** and you can be outside.
> **Boy:** in the fresh air.
> **Girl:** instead of just seeing in pictures
> **Denis:** you don't learn as much from pictures
> **Girl:** cause you don't what it really looks like.
> **Denis:** and you can also know how it smells like by the pictures
> **Boy:** or how it feels like.
> **Denis:** People will tell you that the redwood had a soft bark but you don't know how it feels like unless you touch it (Interview with Ariel's class 4, 25/6/2007).

The pupils emphasised the interactive aspect (Burbules, 2004) of their environmental learning experiences at Wakehurst which allowed them to connect with the environment, to touch and feel the plants, and learn through first hand experience. The pupils also emphasised an embodied perspective of the experience which, as Roberts (2008, p. 25) explains, draws from the philosophical tradition of phenomenology, and suggests that 'experience becomes 'real' because

we sense it and live through it, first as individuals, but then also corporately, as social beings'. The pupils talked about how their opportunity to use their senses in the gardens to explore the environment reinforced their learning. They also implied a positive attitude towards learning in the gardens, being motivated and having expectations for their experiences. These are factors that Falk & Dierking (2000) point out as contributing to learning in museums from a free-choice learning perspective. My research shows these factors are also relevant to the more structured activities in the gardens.

The value of providing real life experiences for young people's education has been argued by the education philosopher Dewey, and also by constructivist psychologists such as Piaget and Bruner, who claimed that teaching should involve experiences and environments which will evoke student's desire and ability to learn (see, for example, Bruner, 1973). Stewart (2003), in her doctoral thesis, investigated the excursions of primary and secondary students to the Royal Botanic Gardens, Sydney. There, teachers also appreciated that the excursions provided a real context for student learning in relation to the school work they had been doing, and also emphasised that the visit should be an enjoyable experience for students. Similarly, Ballantyne & Packer (2002) suggested that nature-based learning experiences offer students the opportunity to apply theoretical knowledge in the field, discover real life examples of principles, problems and issues, see things from a new perspective, and undertake problem solving and decision making in a real world setting.

Lave & Wenger (1991) also suggest the value of education through real life situations, but they emphasise the significance of shifting the analytic focus from the individual learner to learning as participation in the social world. Rather than asking what kinds of cognitive processes and conceptual structures are involved, they ask what kinds of social engagements provide the proper context for learning to take place. During a spring visit to Wakehurst, Cherry Tree Primary class 2 went to the garden's nursery where the gardeners introduced them to the potting shed, starting by presenting the gardeners' tools, and then speaking about the parts of the plants and their growing stages. The pupils concluded their activities by planting sunflower seed into pots and labelling the pots. Here, it is not the knowledge that the pupils gained from the activity that mattered the most, but the fact that they learned from the practitioners, the gardeners, about their work and their tools, and that they had the opportunity to practise under the gardeners' supervision one of their everyday activities i.e. planting seeds. One of the pupils, during an interview, commented on one of the gardeners who were teaching them:

> **Charlie:** Andrew, he is like an expert on planting flowers and stuff. He told us how to plant the seeds. That was all he told us. He showed us loads of stuff about, he showed us lots of parts of plants (Interview with class 2, 27/3/2007).

The pupil's comment on the expertise of their teacher, i.e. the gardener, also exemplifies Vygotsky's learning theory of zone of proximal development. Bransford *et al* (2000) explain that this theory refers to a bandwidth of competences that learners can navigate with aid from a supportive context, including the assistance of a knowledgeable adult, e.g. teacher, parent, or the gardener in this case, or from more capable peers. It is not the competence *per se* of the more knowledgeable person that is important, Chaiklin (2003) suggests; rather, we need to understand the meaning of the assistance in relation to a child's learning and development.

The pupils often pointed out how learning at Wakehurst is fun, but teachers and educators also said that in their objectives for the outcomes of the visit, it was important to combine fun and learning, implying that the experience is an important element of outdoor education. Dewey (1938) argues that it is not enough to insist upon the necessity of experience, but everything depends upon the quality of that experience, and especially the immediate aspect of agreeableness accruing from it. Emotions have been examined in the literature together with values under the generic label of the affective domain. Rickinson *et al.* (2009) propose a lens on students' emotions and values for looking at environmental learning in schools. They suggested that 'emotions may be seen as a driving force underpinning engagement in learning but they may also direct the focus of that engagement' (ibid, p. 48). The lens on students' emotions looks at questions such as how do students feel about the environmental subject matter? Rickinson *et al.* (2009) explain that in the application of the specific lens it is interesting that in some cases it concerns rather negative feelings that the pupils may develop, and that includes pupils' disengagement because of their feeling of unpleasantness or dislike towards the topic. Although there is research that has reported pupils' fears and phobias as barriers to their environmental learning in outdoor environments, for example worries about getting lost and encountering snakes or poisonous plants, as Rickinson *et al.*'s (2004) review pointed out, in my research more positive feelings in relation to how an environmental learning experience in a botanic garden can be enjoyable were revealed. I would also argue that Rickinson *et al.*'s (2009) focus on the negative emotions is also related to the fact that learning is happening indoors – all the research concerns learning in a classroom setting – in a much more confined and structured environment.

Emotional issues have also been suggested as factors contributing to an individual's engagement in free-choice learning in museums (Falk & Dierking, 2000). For example, research has shown that individuals who placed high value on the enjoyment aspects of an exhibition spent more time in the exhibition and demonstrated greater learning than did those who were less concerned about the enjoyment accruing from the experience (see Falk & Dierking, 2000).

8.2.3. Fulfilling the national curriculum, or the curriculum domination

One of the crucial elements of Wakehurst – school collaborations was that Wakehurst had an educational programme developed over many years which was related to the national curriculum. During the fieldwork it was emphasised on various occasions how important it was to link the school visit to the gardens with the national curriculum, especially through science and other subjects. Linking learning in the gardens to the national curriculum means that the education offered by the gardens assists the local schools to meet the targets set by the educational system. Importantly, through planning meetings, the educators can adjust the set activities offered according to the individual needs of each school/class. One teacher commented: I think that's what is special about them; they are able to change their set activities and make them fit with our school (Interview with Cherry Tree Primary teacher Karen, 4/10/2006). Michelle, an educator at Wakehurst, explained how a planning meeting works:

> **Michelle:** here, in the planning meeting you would ask the teachers, what are they doing and, well you would either ask them, 'do you know what you want to do?', cause quite often they come with a specific idea, or if they are not sure, you say 'what are you doing at the moment? This is what we can offer you.' And then you tie it in, to what they are doing. So, it might be the grand finale of a topic or it might be the start of the topic. Or they might want to do something different (Interview with Michelle, 15/3/2007).

The planning meeting, as Michelle explained, was the time when both partners came together to set concrete objectives for the visit based on a mutual agreed strategy. Clear and feasible objectives and a shared vision, have been identified in the literature as important factors for the success of interorganisational collaboration (Mattessich *et al*., 2001; IMS, 1996). When teachers decided not to have the planning meetings because of their workload and lack of time, that decision resulted in less successful school visits (see Chapters 6 and 7). The head of the

Wakehurst learning programme explained how they ensured that the learning programme met the schools' needs:

> **Jean T.:** Well first of all we are looking close to what it is basically that they (schools) need, and what is going to motivate them, so we are getting their feedback as we collaborate with them. And if it is working it maintains itself, if we don't collaborate with schools it is very easy to get to the stage where we are telling people what we think they need. And that it might be right but on the other hand we are far more likely to be wrong. Because there has to be a dialogue. And I think that what we get from that dialogue is a very clear idea of what their needs are, what their drivers are, what will work for them and how that then integrates with what we are doing or we are trying to do, so we get a sense of making it better for the teaching but also it makes us put a lot more effort and a greater degree of thinking into what we are doing here (Interview with Jean T., 31/3/2006).

Understanding the school's needs in relation to the curriculum is an important factor, as has also been identified in the case of museum – school collaborations (IMS, 1996). Stewart (2003) in her research on the excursion experiences of students to the Royal Botanic Gardens, Sydney pointed out that teachers link the experiences with what they teach in science, and use the trip to the gardens either at the beginning of their unit of work to inspire students' enthusiasm on the topic, or during the work on the unit to bring more focus to pupils' learning.

In respect of linking the Wakehurst learning programme with the school curriculum, educators are usually chosen so that they have a teaching background, and an understanding of the national curriculum and schools' needs. Heather, a Wakehurst educator, explained that, apart from having a geography teaching background, she spent much time on learning about the national curriculum in science when she started working at Wakehurst so that she knew what the teachers were looking for at each level. An educator's science knowledge and their skills which they use in their work with pupils, are crucial factors for the collaboration, and simply by employing teachers to work as educators at Wakehurst is not enough. They need to further develop their science knowledge related to the activities implemented in the gardens.

Fulfilling national curriculum requirements and meeting Ofsted pressure on schools to achieve high standards, can become rather restricting factors in what the schools and botanic gardens can do when they collaborate. Sometimes, this pressure can create a rather cynical approach to the collaboration. For example, I asked Mark, a Cherry Tree Primary teacher, to describe the relationship of the school with Wakehurst:

> **Mark:** some of it is a political thing. To get a good inspection report, part of it, you have to show you are using local resources to your best of your ability. Looks good if you are using local resources, and Wakehurst is an outstanding resource. And it looks good on the school that we use them a lot (Interview with Mark, 3/10/2006).

Mark's comment highlights issues arising in relation to the English school inspection system implemented by Ofsted. Although this system is theoretically aimed at school improvement for the sake of young people's education, in practice it can sometimes create a mentality in schools, and with their staff, that aims for what looks good for the inspection, but is not necessarily for the students' benefit (Rea, 2008).

On another occasion, Mark said that going to Wakehurst and achieving specific learning targets is at the top of the school's priority. Although there has to be enjoyment during a school visit, there is much pressure on the pupil's time, especially towards the end of the primary school years, the learning benefits from the activities have to be explicit and related to the classroom teaching so that the experience in the gardens will be worthwhile. Thus, links with the curriculum are essential as teachers feel that they will only go to Wakehurst if their school topic fits with what they can do there. Some teachers made decisions about the regularity of the visits according to how well a visit would fit with the curriculum. I also found that different teachers may adopt different views on the curriculum links with Wakehurst. For example, Karen, a Cherry Tree Primary class 2 teacher, regarded the visits to Wakehurst as worthwhile only if there was a fit with the science curriculum. For that reason she reviewed her class visits during 2006-2007 and concluded that for the next year it would be better to visit Wakehurst less often, and only where it fitted with the science curriculum. Conversely, Joyce, Cherry Tree Primary class 4 teacher, organised her visits in relation to a variety of subjects from arts and history, to geography, English and science. At the end of the year, when the school's policy was reviewed, and it was decided to reduce visits to the gardens, she was the most disappointed teacher as her visits were not confined to science and she could always make links with other subjects and develop a worthwhile experience in the gardens that was curriculum related. Joyce also pointed out that her trips to Wakehurst have a wider scope: 'there are learning benefits that go beyond the simple sort. We tick these off our learning list because speaking and listening and joining in and participating and the acting out are a path for developing confidence' (Interview with Joyce, 25/5/2007). Joyce's wider view of the outdoor education benefits at Wakehurst, in comparison to Karen's more restricted view, also links to the higher value Joyce places on outdoor education and her

own confidence in taking her pupils outdoors. Joyce's attitude may be a result of her longer teaching experience as opposed to Karen's relative lack of professional experience. In addition, as has been discussed in Chapter 7, Joyce had developed a stable collaboration with experienced educators at Wakehurst which enabled her to implement her teaching and learning vision, and offer a wider variety of activities for her pupils, something that did not occur for Karen.

Both Jones (2003) and Sanders (2005), who conducted research in British botanic gardens, not only showed evidence of how much the gardens' programme considered the national curriculum, especially science, but also of how teachers decided whether they would organise a visit to the gardens in relation to the curriculum topic they studied at school, and their personal interests. Rickinson *et al.*'s (2004) review of research on outdoor learning indicated that curriculum constraints are a major barrier to outdoor learning. Wakehurst, by offering activities that were explicitly linked to the national curriculum, minimised that constraint. Dyment's (2005, p.39) research on the use of green school grounds as sites of outdoor learning in primary schools in Ontario, showed that certain subject areas were more likely to be using the school grounds as an outdoor classroom:

> for instance, in science teachers were more likely to take students outside. And little teaching is happening outside beyond science…So the lack of obvious curricular links is a key barrier that limits outdoor learning.

As mentioned above, there was a similar attitude in the UK primary schools of my research, where the majority of the teachers stressed that they would organise a visit to Wakehurst provided it linked with the science curriculum. However, I also had examples where the teachers were interested in a cross curriculum approach for the school visits to Wakehurst (i.e. Joyce, Amy, Esther). These examples were of teachers who were more enthusiastic about their collaboration with Wakehurst, and in a way were inspired by the potential of the gardens to contribute to pupils' learning experiences.

In Chapters 6 and 7 I identified an interactive approach to experience as the educators and teachers emphasised the need to link pupils' environmental learning experiences in the gardens with their learning experiences at school. That approach is based on a pragmatist philosophy, and Dewey's education theory which suggests the need to create a continuum of learning experience between different contexts (Roberts, 2008). That approach is also congruent with Falk & Dierking (2000) who emphasise the influence of prior experiences in individual's free-choice learning in museums, and also with Rickinson *et al.'*s (2009) suggestion that environmental

learning is best understood by looking at issues to do with relevance e.g. relevance to the learner as present or future self, to current issues, to learner experience, to the curricular context of environmental learning. Teachers' and educators' persistence in linking the environmental learning experiences at Wakehurst with the national curriculum implied an interest in creating a continuum of learning experience between school and the gardens. However, that persistence could be also regarded as a means to an end, i.e. the teachers and/or the educators are interested in satisfying the curriculum requirements per se rather than in ensuring the wider educational value of the learning experience in the gardens. Roberts (2008) defined that approach as neo-experientialism based on a neo-liberal ideology. Neo-experiential education emphasises efficiency and individual performance, where the experience becomes technical and instrumental, bounded in time and space, and controlled by the teachers and/or educators. The neo-experiential approach is considered by Roberts as a growing trend in experiential education, evidence of which is the 'predominance of "one-off" experiential programming whether that be half-day ropes courses[28] or environmental education-center field trips designed to fulfil curriculum content standards' (ibid, p.30).

8.2.4 Tensions between indoor and outdoor experiences

The issue of Wakehurst complementing what is offered at school, and adding to the variety of pupils' experience, came up quite strongly in my research. I quickly saw the tensions arising between the indoor and outdoor teaching at Wakehurst, and the fine balance necessary between teaching in the school classroom and teaching at Wakehurst. For example, most of the participants said how important it was to create experiences at Wakehurst which were different from what was offered at school. However, in some cases indoor teaching took place during a visit to Wakehurst and, as a result, teachers and/or pupils expressed their dissatisfaction with the particular indoor activities. Participants had conflicting perspectives on the reasons for implementing activities indoors and outdoors at Wakehurst, and how successful these were in terms of learning outcomes and in offering a valuable educational experience to the pupils. In what follows, I present the tensions and respective participants' dissatisfaction which arose in

[28] A ropes course is a challenging outdoor personal development and team building activity which usually consists of high and/or low elements. Low elements take place on the ground or only a few feet above the ground. High elements are usually constructed in trees or made of utility poles and require a belay for safety (http://en.wikipedia.org/wiki/Rope_course).

relation to the indoor and outdoor experiences at Wakehurst. I also give examples of situations when such tensions are less likely that to happen. My main argument is that when tensions and dissatisfaction arise, then the collaboration can weaken as the participants do not necessarily see what the collaboration is offering that is valuable. It is important to point out these tensions around improving practice, because this is an issue that the educators did not seem to be aware of according to my interview data.

The pupils in my research made clear distinctions between their experiences at school and experiences at Wakehurst:

> **Jasmin:** at Wakehurst we learn outside all the time. We stay outside all the time, but here (at school) we just sat indoor all day (Interview with Elm Tree Primary Yr4 pupils, 25/6/2007).

Pupils from Cherry Tree Primary pointed to a variety of ways that learning at Wakehurst is different from learning at school:

> **Willow:** I would say we get to learn a bit more at Wakehurst; because it is a bit in nature, and we learn more about nature than about maths
> **April:** yeah! it's really quite different because here (at school) we are sitting very straight, Mr Thomson (Mark, their teacher) will tell us, and we will have maths books and we have to write.
> **Peony:** At Wakehurst it's much more laid back, much more fun
> **Willow:** and relaxing
> **April:** you can be with your friends and you can always talk
> **Peony:** a nice environment for learning also
> **April:** you are not sitting on your desk, it's fun
> **Peony:** when you go there you think, you actually want to learn the stuff there 'cause it's quite nice
> **Ben:** what happens is, you are actually doing something you can't do with normally just writing it down; you are actually doing it; you are not just learning about it; like if you are learning about shelters you are actually doing it, you are not just learning about it (Interview with Cherry Tree Primary class 5, 4/10/2006).

The pupils identified different aspects of their environmental learning experiences in the gardens in comparison to their learning experiences in school. They emphasised the less structured, relaxed way of learning at Wakehurst as opposed to the more strict, very well defined and teacher-controlled experiences in the school. Factors that influence pupils' learning at Wakehurst

have been also identified by Falk & Dierking (2000) within their Contextual Model of Learning. These are 'choice and control', 'motivation and expectations', which comprise the 'individual context' of their model, and 'within-group sociocultural mediation', which comprises the 'sociocultural context' of their model (ibid, p.137). Pupils also referred positively to the interactive and involving aspects of their experience as they preferred to actively participate in a real life context rather than learning second-hand, for example through writing, which implies a preference for immersion in the experience (Burbules, 2004). As already noted, Rickinson *et al.* (2009) suggest a lens to look at emotions and values in relation to environmental learning and here the pupils reported their emotional engagement during the experiences in the gardens which evoked feelings of enjoyment, interest, and relaxation. From the above excerpts pupils' appreciation of learning in a different way at Wakehurst is evident. However, in the many and various activities I observed during my fieldwork, I found a range of perspectives with regard to the extent to which what was offered in the gardens could also be offered at school with the same likely outcomes.

Activities that could not be done at school

Participants highlighted outdoor activities (the trails) or indoor activities related to the national curriculum using facilities that the schools do not have, such as the Millennium Seed Bank or the laboratory. For example, Esther, a teacher from Cherry Tree Primary, argued that at school they would not be able to do the same walk on a trail as the school grounds are quite restricted. Ariel, a Elm Tree Primary teacher, said that she would have preferred to do activities at the Millennium Seed Bank during her class visit as that is an activity that 'you can't do in the classroom'.

Activities that could be done at school but are better done in the gardens

Many teachers appreciated doing outdoor activities at Wakehurst with better resources than those that they have at school, and being tutored by experts. Also, in a few cases teachers argued that it is still worthwhile doing an activity *indoors* at Wakehurst because the resources are too expensive to be provided by the school, or because it matters who does the teaching. For example Joyce, a

Cherry Tree Primary teacher, chose the food miles activity during a WWII-focused visit to Wakehurst which took place in the Wakehurst mansion classrooms. Joyce justified her choice:

> **Joyce:** I don't think it hurts to do things elsewhere, having different voices saying it. It's not an activity that we couldn't do in class, it's an activity that done elsewhere can make a difference, and it was one of the activities they offered and it linked with our topic area (Interview with Joyce, 3/11/2006).

Joyce gave a Vygotskian perspective on the learning experience, according to which it is important to look at the adults who are mediating pupils' learning. However, even if the teachers are content with indoor activities that are better done at Wakehurst, the pupils expressed their dissatisfaction with activities indoors as they resembled the experiences they have at school. At the end of the school year the pupils reviewed their experiences at Wakehurst and pointed out:

> **Elliot:** my best visit was the orienteering because you get to run around stuff and you don't sit down inside that mansion.
> **Daisy:** yeah mansion is boring
> **Rosemary:** I didn't like the food miles one; because it was boring, we sat in the mansion all day (Interview with class 4, 19/6/2007).

Here the pupils argued that they preferred the interactive aspect of the orienteering activity outdoors rather than the indoor activity that was less effective at stimulating their interest and engagement. This is also an example of the pupils having expectations which are different from the expectations held by the teachers. The pupils emphasised that for them a visit to Wakehurst is an outdoor experience. They may even not necessarily expect to learn anything, but they do look forward to a day out of the classroom. Such expectations have implications for how pupils are actually likely to engage in 'indoor' learning at Wakehurst.

Activities that are better done in the school, with something more special done in the gardens

When activities that are organised at the Wakehurst classroom could easily be replicated at school, dissatisfaction may be expressed by the participants. Ariel, an Elm Tree Primary teacher, explained why she did not find some of the visit activities on the Rainforest topic to be worthwhile:

> **Ariel:** the trip that we've been on today, two of the activities that we did, could very easily be done at school in the classroom. I will be scribbling down notes about that, so that we can do that ourselves next year, and then maybe when we are there we could do two other activities that should be different. Because it's nice if you are going somewhere to do something that you can't do in the classroom. I do like to have the children outside if you can, especially on a visit. Otherwise your school trip is to another classroom (Interview with Ariel, 20/6/2007).

Ariel was not very happy with the classroom activities – her view coincides with the pupils' dissatisfaction already mentioned in relation to indoor activities at Wakehurst. However, she did find them useful in the sense that she could use the educators' techniques for her teaching at school. Also, Mark, a teacher from Cherry Tree Primary, expressed his dissatisfaction with the classroom activities at Wakehurst because, as he argued: 'Why walk all the way to Wakehurst to do something we could have done it here?'.

Figure 8-2 summarises such perspectives in a continuum starting from indoor activities organised at Wakehurst that could be implemented as effectively at school, and finishing with activities that could not be implemented at school. In moving from one end of the continuum to the other, the dependency of schools on the gardens changes. This is especially so when the experiences in the gardens resemble experiences in schools, which means that the schools feel that they do not need their collaboration with Wakehurst, and dissatisfaction may be felt by pupils and/or teachers. Visiting Wakehurst on those occasions loses the element of doing something different as the classrooms situated in the gardens' mansion look similar to a school classroom. Of course, there are occasions where the teachers may appreciate indoor activities in the gardens, prepared and implemented by educators, as these would have required much more effort for the teachers to deliver in school. However, the pupils seem to have different criteria, and have expressed their dissatisfaction when indoor experiences in the gardens mimic the classroom experiences they have at school. Although I do not have evidence that shows that the organisations' collaboration may come to an end when a school's dependence weakens, dissatisfaction does seem more likely to arise, which may have an impact on the quality and success of the collaboration, especially as the participants (teachers and/or pupils) may lose their enthusiasm for it. The theory of collaborative advantage (Huxham & Vangen, 2005) suggests that in order to gain real advantage from collaboration, something has to be achieved that could not have been achieved by any one of the organisations acting alone. This research has shown that when activities were organised indoors either the teachers report that they could have done them in school, and/or the pupils

complain that they too closely resemble their experiences at school. Thus, collaborative advantage for the organisations is lost and the collaboration subsequently weakens. It is as if the organisations lose a little of the reason to collaborate.

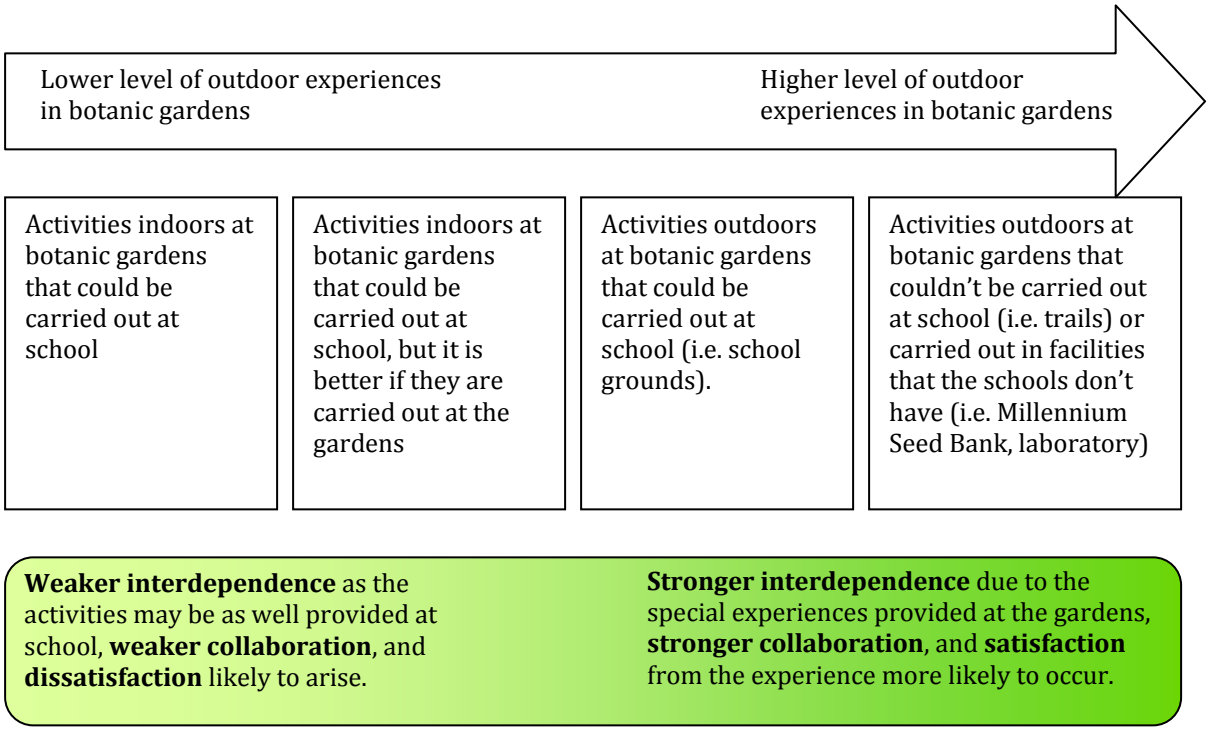

Figure 8-2 Tensions between indoor and outdoor experiences in the botanic gardens

The educators have argued that they usually try to organise most of the activities outdoors which is the part of the visit that they enjoy most. Heather, a Wakehurst educator, commented:

> **Heather:** I always like going out on the trails cause I think that the most important thing when they come is to go outside and see it and visit the school garden (Interview with Heather, 29/9/2006).

Moreover, the educators also try to avoid their teaching techniques resembling school teaching. For example, Michelle, a Wakehurst educator, does not give worksheets to the pupils during a trail, or use a map for the introduction of the trail with some associated activities – something that the teacher had proposed to her – because that kind of activity could be easily done in the class (for example, before the visit), and would resemble activities the pupils do at school. Ballantyne & Packer (2002) have suggested that environmental educators and school teachers who teach in natural environments should not overstructure outdoor activities as this can cause dissatisfaction for the students. This is especially the case in relation to note-taking. Worksheets, they argue, do

not add greatly to environmental learning, while 'the opportunity to touch and interact with wildlife…is likely to have significant impact' (ibid, p.229). Michelle's pedagogic approach when teaching outdoors, which favours direct experiences in the gardens environment, and learning through doing rather than learning through reading and writing, reflects the approach suggested by Ballantyne & Packer (2002). Although, Michelle had been a school teacher for many years, in her role as an outdoor educator at Wakehurst she developed and adopted more experiential teaching techniques. The issue that arises for the collaboration is that some school teachers (but clearly not all) who plan visits in collaboration with educators may try to insist on the use of more structured classroom/indoor style pedagogies which will guarantee that the activities will fulfil the national curriculum requirements. In such occasions, the planning meeting is a good opportunity for the educator to explain the benefits of 'hands on' activities in the gardens for pupils' learning. More research evidence would also be useful for the educators to strengthen their arguments with school teachers. Michelle exemplifies why the school – botanic gardens collaborations are important as the educators not only have the subject knowledge but they also apply the appropriate pedagogies for teaching outdoors which some school teachers may lack.

It should be noted that weather was also one of the factors that influenced educators' decisions to organise activities indoors during schools visit to Wakehurst and Dyment (2005) has reported that teachers tend to avoid organising activities outdoors during specific seasons because of the weather.

Indoor teaching at Wakehurst is more likely to be organised when the emphasis in relation to school visits is on learning objectives that fulfil national curriculum requirements, and when teachers and educators prioritise their thinking on how to better achieve learning targets. Activities indoors usually comprise a workshop at the beginning of the visit which provides the introduction to the main topic and background knowledge for the pupils. After an introduction, the schedule typically involves an outdoor activity during which the pupils are called on to implement and hence consolidate their new knowledge in a real life context. For example, the indoor plant eater workshop, that focuses on which parts of plants we eat, is followed by a trail in the gardens observing parts of plants. The indoor activities at Wakehurst that are strictly focused on the national curriculum illustrate another example of a neo-experiential perspective on experience (Roberts, 2008) which has been pointed out previously (see section 8.2.3, p.290). The experience is as efficiently controlled as it is in the school classroom, and aims to satisfy the national curriculum. On the other hand, pupils, teachers and educators who argue for creating

environmental learning experiences at Wakehurst that are different from school, emphasised more of an embodied perspective on an experience. 'Due to the heightened awareness of sensorial experience, lived experience become something special as opposed to something mundane' (Roberts, 2008, p.25). Furthermore, pupils distinguished their environmental learning experiences in the gardens from learning experiences in school using elements that characterise free-choice learning situations. For example, their experiences in the gardens fulfilled their expectations and interests, gave them some level of choice and control, and motivated them to learn. Issues arose especially when the experiences happened indoors at Wakehurst which meant that elements of free-choice learning could not be accommodated (see Falk & Dierking, 2000 on the factors of free-choice learning in museums).

The main reason I raise the tensions between indoor and outdoor experiences in the gardens is not to adjudicate on what is the best, but rather to encourage reflection by educators and teachers on the pedagogies used in the gardens. The cases where teachers have expressed their dissatisfaction with visit activities that were done indoors, and could easily have been done at school, are all cases where the teachers and the educators were not equally involved in the planning of the visit, where there was a lack of communication, and where the schedule of the visit was not the result of mutual agreement. All these elements indicate that the limited interaction between teachers and educators did not result in a successful collaboration, and that the lack of teacher involvement in the collaboration is more likely (but not always) to result in teacher's dissatisfaction with the experiences offered indoors in the gardens. However, the balance of time spent indoors and outdoors during the activities in an outdoor education setting such as botanic gardens should be taken into consideration by educators and the way they develop their educational programmes. In particular, when educators plan school activities they need to consider factors such as time, weather, curriculum requirements, but also the potential elements that may cause dissatisfaction with the collaboration.

Data that focused on how schools depend on the gardens, showed the different perspectives that participants can hold with regards to gardens – school collaborations and experiences *in* the gardens. For example, in relation to indoor – outdoor tensions, teachers may welcome some activities indoors in the gardens as they will be taught by different people, and with the teaching work being done by someone else making their lives easier. Conversely, pupils may not appreciate the indoors experiences, because for them, the experience outdoors in the gardens matter more. It became evident on a variety of occasions that participants in school – gardens

collaborations may come from different perspectives, and be evaluating the visit or other activities with different criteria. Zoe, a Wakehurst educator, explained her own view about the difficulty of having to fulfil different expectations, and what these expectations might be in some cases:

> **Zoe:** The children every time you say 'tell me the best thing you enjoyed at Wakehurst?' they say 'the lunch'. They are coming with different issues as well. They are thinking it's a day out of school, it's a day away from the classroom and at the end of the day for us, our purpose as educators, it is for them another school day, just in a different environment. So in a way you get three different things not necessarily gelling together. You get teachers who get a nice day out, educators here who have to fulfil their teaching objectives, and you get some kids for whom the only thing they are interested in, is running around and having lunch. And if they pick up anything on the way well that's a bonus, really (Meeting with Wakehurst educators, 24/09/2007).

Zoe identified different viewpoints in relation to the environmental learning experiences in the gardens. Rickinson *et al.* (2009) argued for the need to look at teachers' and students' perspectives together in order to avoid a tendency in educational research to separately examine research on teaching and that on learning. For that reason Rickinson *et al.* suggested applying a lens on 'different viewpoints' when looking at environmental learning in a school, which includes looking at how learners' and teachers' viewpoints may vary in relation to the process and content of learning, looking at where conflicts and tensions emerge between teachers and learners, and how student engagement and learning are affected by such tensions. My analysis showed that pupils', educators' and teachers' differing viewpoints on the pedagogies used, and the spaces where the learning experiences in the gardens take place may result in tensions and pupils' disengagement or lack of immersion in the experience, especially when activities take place indoors and resemble the conditions of school classroom activities.

The issue of different expectations and approaches to experiences in outdoor education settings was also explored in Dillon *et al.*'s research (2005) which identified five different types of educational emphasis in outdoor contexts such as farms, nature centre and school grounds: the experience, the outdoor context, pedagogy, an integrating idea, and learning (for more details on the different approaches see Chapter 3, 3.5.). The types, whilst not necessarily fully discrete, can all make important and distinctive contributions to the totality of the learning experience. These different types remind stakeholders of different possibilities about priorities and process, and

allow them to map these in relation to the interaction needed in using the outdoor classroom for learning. In addition, Dillon *et al.* (2005, p.3) suggest such considerations

> will be useful as sources of new ideas or tools for planning, structuring and evaluating outdoor classroom activities, and that further exploration of the issues they raise will prompt thinking and conceptual clarity when planning and evaluating developments to support outdoor learning.

Data from my research fit with the types of emphasis identified by Dillon *et al.* (2005). For example, pupils value the lunch experience, looking at the ducks, having fun in the gardens, learning as fun in an environment that is different from the school and the way they learn in the classroom. Conversely, some teachers and educators may place more value on learning in the gardens beyond what the national curriculum requires. Different emphases may be ascribed to different aspects of activities in the gardens by different people. As long as all expectations are met during the activities, everyone leaves satisfied and the collaboration can be regarded as successful. Problems can arise, however, when more emphasis is given to some aspects of the visit, for example, when acquiring specific knowledge is prioritised at the expense of achieving a memorable experience for the pupils (something I pointed out when I identified tensions between indoor and outdoor experience in the gardens). My research shows that if, during the collaboration of the school with the gardens, teachers and educators clarify which emphases they want to pursue, and come to an agreement, then dissatisfaction is less likely to arise during the experience, provided the pupils' perspective is also taken into account. Moreover, the emphasis during the visits may change according to the time of year. For example, I found that in autumn and spring, the visits were mostly focused on links with the curriculum, while in the summer teachers put more stress on the fun aspect of the visit. That tendency of changing emphasis of the school visits according to the time of the school year was also identified by Peacock (2006) who investigated school and family visits to the Eden Project, UK.

8.3. How Wakehurst Place depends on schools

Interdependency in a collaboration presupposes that both organisations depend on each other in different or the same ways. Below, I explain how Wakehurst depends on the schools and implications for the collaboration.

8.3.1. Financial resources

The financial resources that the schools contribute to the collaboration with Wakehurst are mainly the money the pupils' parents pay for the cost of the school visit including transport costs and fees for the gardens organising the visit. The cost of the visits to Wakehurst dictates whether schools could afford other outdoor education visits for their pupils. Cherry Tree Primary school visits to Wakehurst had no transport costs so they could visit the gardens more often and afford an annual trip to other outdoor education settings as well. For Elm Tree Primary the transport cost of the visit to Wakehurst allowed only one year group to visit Wakehurst as part of their annual outdoor education trip while the other year groups visited other places. Oak Tree Primary Yr6 pupils' main annual out of school activity is a residential trip abroad. However, a trip to Wakehurst is also affordable as the pupils' parents transport them to the gardens which reduces the cost of the visit immensely.

When I asked Cherry Tree Primary teachers to comment on whether their collaboration with Wakehurst could be an example for other schools to follow, they commented that the transport issue is a big constraint on what schools can do in terms of school trips. Acknowledging the issue of cost for the regularity of out of the school experiences offered to pupils, the head of the learning programme suggested:

> **Jean T.:** I think there is a limited number of botanic gardens, but I don't think botanic gardens are the only places that can provide similar experience relating to the environment. And yes we've got some specialist areas but there is probably a large proportion of schools that can access somewhere relatively close. I don't know if anyone has sat down and said 'you can talk to your local warden in your local reserve or the farm area'. What I am trying to sort of see in the way this develops, is that there's like a virtuous circle; so if you are close to somewhere you will have to develop an open, in-depth relationship with the location and the people there, because I think that has a lot of value in the way it develops over time both for the children, the teachers, and the people you are working with and the understanding that goes with that. Above that you then have those places that you visit once or twice, and what you can do with those, and how that provides benefit. There are also other things that should be in that circle to enable both ourselves and yourselves to make the most of that. Things like training courses means that you are able to do something in your school grounds supported by either an organisation or a location, and the bird box is actually a wonderful example of that (Meeting with representatives of the local schools, 14/5/2007).

Jean T. proposed a model of how schools can develop their outdoor education policy through a combination of collaborating with local resources staff for more regular outdoor experiences and further trips to outdoor education settings as one-off experiences. Her suggestion should be considered as a potential model the schools may consider in relation to implementing the 'Learning Outside the Classroom Manifesto' (2006a). That kind of model is underlined by an interactive, Deweyan approach to learning experience (Roberts, 2008) according to which what matters is creating a continuity of experience between the learning experiences at schools (in and out of the class) and the learning experience in outdoor education settings, both local (for regular experiences) and settings in more distant locations (for one-off experiences). Encouraging pupils' learning across contexts and beyond the school boundaries is also important for stimulating pupils' interest and exemplifying places where they may pursue their interests by themselves outside of the school hours either in their local environment or in places in further locations. Barron (2006) proposes a *Learning Ecology Framework* where learning ecology is the set of contexts (physical or virtual spaces) that provide opportunities for learning and each one includes a configuration of activities, material resources, and relationships. Barron's framework is based on empirical research on how adolescents are simultaneously involved in many settings and create activity contexts for themselves within and across settings. While adolescents may have more freedom in their choices and may be given more opportunities to pursue their interests beyond the safe/controlled environments of school and family home, it is important to learn from a young age that learning can be pursued in a variety of contexts. Within primary education this is possible by creating links between the school learning and learning in different outdoor education contexts.

My research has established the benefits of developing collaborations with schools and local outdoor education settings. As cost has been one of the restrictions for providing more out of schools experiences for pupils, using local resources offers a solution to that problem. However, visiting a local resource frequently should only be pursued because of what the resource can offer, or the potential that could be developed if the schools collaborate with the staff of the outdoor education settings. That finding should also be seen in relation, and as a response, to the transport and cost of the school visits which have been highlighted by other research and outdoor education initiatives reports as barriers to the provision of outdoor learning opportunities for young people (Groundwork, 2002; Scott *et al.*, 2003).

Client – provider relationships and consequences for learning opportunities

The fact that the school pays for visits to Wakehurst, establishes a relationship of provider (Wakehurst Place) and client (school) and hence the educators need to deliver what they are asked. That financially based relationship puts some restrictions on what the educator may teach and how much they can determine the focus of the visit. The gardens need the school visits to justify their educational existence and hence have to fulfil school expectations 'by hook or by crook', as one of the educators characteristically stated.

The following example illustrates dilemmas the educators face when organising a school visit, and some implications for the learning opportunities emerging during a school visit through non-directed learning / free-choice learning. Cherry Tree Primary class 5 (Yr5 & 6 pupils) visited Wakehurst in the autumn of 2006, and the theme of the day was 'A place to grow, how plants adapt'. When the children started touching the tree's bark at the end of investigating the birch habitat, one girl asked: 'Why is the birch peeling off?' Many guesses from the children followed the question and then another pupil asked 'Why don't other trees do that? Kelly, the educator, linked the change of the trunk's surface with changes to human's skin when it is rubbed. The use of metaphors is a popular teaching technique used by the educators in the gardens as they contribute to pupils' learning in a way that is linked with their previous learning experiences (see Falk & Dierking, 2000 on previous experiences as a factor influencing learning in museums). The pupils tend to respond positively when the educator is using a metaphor, which indicates that this is an effective teaching technique. Following Kelly's metaphor I noticed one boy peeling off the birch bark and other pupils doing the same. The pupils recalled that incident when I showed them pictures from the visit:

> **Boy2:** This is when we were looking at the birch tree skin, bark.
> **Researcher:** what exactly were you doing with the bark?
> **Boy2:** we were just looking at it, it was pulling off very easily
> **Girl 1:** we were looking how
> **Girl 2:** how it came off
> **Girl 1:** yeah how it shredded its bark (Interview with class 5, 4/10/2006).

The pupils, by using their senses and looking and feeling the tree trunk, explored the natural process of how the birch tree sheds its bark. Kelly's metaphor stimulated their interest so they

decided as a small group to focus their attention to the tree and observe it more closely. This is an example of a more free-choice learning experience within the structured activity. Falk & Dierking's (2000) Contextual Model of Learning in museums provides a useful tool to explore pupil learning which, in the specific example, had a more free-choice character. The physical context of the learning experience provided not only the context within which learning can occur, but the gardens' rich environment has the potential to stimulate a desire to learn. 'In the right setting…the learner is surrounded by sights, sounds, and textures that foster curiosity and encourage exploration' (ibid, p.196). The individual context was also important as the pupils followed their own interest stimulated by the educator's teaching, so they were motivated for further exploration of the environment, becoming more independent, and wanting to make their own choices and take control of their learning. Furthermore, it is also important to look at the sociocultural context of their experience which was mediated initially by the educator's teaching. Following this 'within the group sociocultural mediation' (pupils observing more closely as a small group the birch) became a stronger factor.

What is interesting in the example above is that the pupils' environmental learning experience which took place during a structured visit organised by the educator and teacher in collaboration, can be interpreted by applying Falk & Dierking's model which is based on free-choice learning experiences. Pupils are regarded as active learners and learning is explored from the learners' points of view as well as the teacher's/educator's point of view. The process of learning is examined as well as the outcomes. Researchers in the environmental education field have been calling for more consideration of the children (i.e. the subjects of environmental education), including more attention to learning process rather than just to the learning outcomes (Payne, 1998; Rickinson *et al.*, 2009). This example also shows the interaction between the physical environment and learning. For example, the educators' teaching, combined with the physical context of the gardens environment, stimulated students' interest which then encouraged students to choose and have more control of their learning and focus closely on the particular tree.

Kelly, the educator responsible for the visit, reflected on the incident and provided more information related to free-choice learning elements that emerged during the visit:

> **Kelly:** It was interesting what the children picked up with the bark that had nothing to do with A place to grow or plant adaptation. It was something that several of them were interested in, and then someone said 'How does the oak tree do it' they don't all peel, why don't they all peel bark off like this? And then picking it up again on the trail, talking

about the horse chestnut, looking at the bark, and how that has shed its bark in pieces in different ways. So that was nothing to do with the day at all. It's just things come up from the children's questions. I think it's very good to listen to what children are saying, the questions they are asking and to be flexible enough to incorporate that. As far as the children's learning is concerned, this is a question I am asking myself 'Is it better to follow the children's interest and what the children want to learn?' Because if they want to learn it then they will learn it very well. Or, 'Is it better to stick rigidly, to what you know the teaching objectives are?' Well, the science curriculum at school says what they should be learning, which was the place to grow and plant adaptation. And the school is paying for the day, they've got to have what they want. If they insist on something, you have to deliver that. So, that would have been unfair from me, wouldn't it? To decide to leave what they wanted. I don't have the right to do that, really (Interview with Kelly, 3/10/2006).

Kelly explained how the pupils followed their own interest during the other activities in the gardens, and how they were able to use their learning during the first activity to pursue further learning during the subsequent activities thus creating a continuum of environmental experience from one activity to the other according to the interactive perspective of experience (Roberts, 2008). Conversely, their interest was not completely followed through during the visit. The educator seeing the pupils' interest in the bark of the trees, could have diverted her teaching into exploring the gardens' tree species and the variety of barks. She also could have gone on to explain more about plant identification based on the bark of the trees. However, that did not happen. As the educator explained, she also had to deliver the activities based on the school curriculum, and so the learning experiences had to be efficiently controlled, and remain related to the pre-determined learning objectives. Rickinson *et al.* (2009) have also drawn attention to the differing viewpoints that may exist between teachers and students in relation to the classroom environmental learning; for example, differing views on whether the subject matter is controversial, or differing views on what is relevant for the students to learn. Here, the differing views concern the content of the environmental activities outdoors, whether this should be predetermined and related strictly to the school curriculum, or whether it can be diverted according to the pupils' interest. Having seen the teachers' reaction in other cases, when the visits were not strictly linked with the national curriculum, I can understand the cautiousness of the educators not to divert from the pre-planned activities. However, when I interviewed the teacher he sounded more flexible than I expected:

Mark: When we were talking about the tree that had a bark that was waterproof, I saw a couple of boys, particularly when she (gardens' educator) said we make boats with this

> bark, I was thinking what they wanted to do was 'we are gonna find some water with this bark and pour it on'; actually prove that it was waterproof. But we only talked about it. And there's no follow up. That would have been perhaps more interesting. We went through a phase in education few years ago when planning was everything. You planned a lesson and you taught it whatever happened, and it was very very structured. And fortunately things have changed little bit, and it's a bit more relaxed, and they used to have this thing when during the lesson, if you were in the middle of a maths lesson, and a butterfly flew into the classroom, in an ideal world you would stop your maths lesson and you would say: whoa! look at this butterfly, and you would talk about that, and you follow where circumstance took you. In the middle of the lesson if a child said something and took you off on a tangent, you would go with it. Fortunately, we are getting back to that now, when we can do that, but for a little while people wouldn't do that. So you would ignore the butterfly and you would just keep on your lesson regardless. And I think the option to do a little bit more of that at Wakehurst perhaps would be good, but again it would be hard if the staff aren't experienced teachers. It's not easy just to divert from your planned day (Interview with Mark, 12/10/2006).

As a resolution to accommodating non directed environmental learning opportunities during a visit, the educator could raise the issue during the planning meeting. If the teacher is in a way prepared and has agreed to encourage non directed learning, then it is less possible for dissatisfaction to occur in relation to the school visits. More importantly, the pupils' interests will be pursued. That kind of dilemma may easily arise in outdoor settings such as botanic gardens where the seasonal changes offer many interesting features to attract the pupils' attention during a visit on a theme that has been predetermined according to the national curriculum prescriptions. In that case an experienced educator may also be confident enough to propose activities during the planning meeting that will take advantage of the seasonal changes in the gardens' stimulating environment.

One of the issues that arose in the excerpt from Mark's interview concerns the importance of following pupils' emerging interest during a visit. It is a challenge, and only an experienced educator, with a wide breadth of knowledge would be able to fulfil all pupils' learning needs in this way. Barron (2006) explored how adolescents pursue learning opportunities both in and outside school when they become interested in a topic. She proposed the learning ecology framework to understand how learning outside school is related to learning within school. She identified different types of self-initiated knowledge building strategies that the young people

adopted, and presented pathways for the development of interest and knowledge that included a pursuit of further learning outside school. The learning ecology framework is based on the idea that interest and self-sustained learning are important for human development. In relation to that argument, it is important to nurture pupils' personal interest during their environmental learning experiences in the gardens as that will illustrate to them that learning is not only about acquiring predetermined knowledge transmitted by the experts, but is also about an individual being curious to explore the world, and being confident to pursue their own interest for the sake of their personal development. Applying Barron's ideas to the example of the pupils who became interested in the birch tree, the educator could have diverted the gardens' activities accordingly to accommodate pupils' interest, and the teacher could have followed through that issue during the work back in school. These strategies would have illustrated to the young people how their self-initiated interest in learning can be pursued and satisfied through a variety of activities in different contexts and settings.

Peacock (2006) investigated family visits to the Eden Project and noticed the lack of children's eagerness to direct their own learning which would allow them to become effective independent learners. That did not mean that the children were not curious, as almost all of them were interested and excited by the surroundings. What was missing, however, was an awareness of their power as agents of their own learning and a wish to explore ideas for themselves. That phenomenon Peacock (2006) explained may originate outside of the family and in the English primary classroom where there is a trend towards structure and uniformity of teaching styles arising out of the imposition of national literacy and numeracy strategies. Children in school have, in recent years, been less likely to undertake free exploration and independent learning.

> Hence children's experiences of visits to contexts such as the Eden Project are likely to be coloured by their association with 'learning' as having to do with being told what to do, working in groups, using worksheets and listening (ibid, 14).

In relation to balancing directed and non directed/free-choice experiences, an Australian study on nature-based excursions (Ballantyne & Packer, 2002, pp.228, 229) stressed that

> Environmental educators and school teachers who teach in the natural environment should be wary of over-structuring the learning activities they design. Students would like to be given greater freedom and choice in what they do during the excursion. The use of worksheets, note-taking and reports were all unpopular with students and did not appear to contribute greatly to students' environmental learning, at least in the short

> term…If one of the aims of learning in natural environments is to stimulate students to reconsider their environmental attitudes and behaviour, there may be more to be gained by allowing students to engage emotionally with the environment than by attempting to enforce a more cognitive response. In particular, the opportunity to touch and interact with wildlife is an emotive experience for young people that is likely to have significant impact.

Accordingly, Griffin (2004), in her research review on school field trips focusing on pupils' views, reported that a number of recent studies have shown that students value the provision of choice and control in their learning in museum as well as appropriate opportunities for orientation, socializing and revitalisation.

8.3.2. Bringing audience for environmental conservation education (gardens mission)

In theory, botanic gardens are highly dependent on the school audience to disseminate their messages. In the 'International Agenda for Botanic Gardens in Conservation' (Wyse Jackson & Sutherland, 2000, p.34), which is a global policy framework for botanic gardens worldwide to contribute to biodiversity conservation, it is suggested that:

> The role of botanic gardens entails being an advocate for the maintenance of biodiversity and therefore botanic gardens need to reorient their education programmes and incorporate a vision for a more socially and environmentally sustainable future.

During interviews with my research participants I was expecting to find an explicit reference to the value of education in the botanic gardens in respect to learning about the importance of plant conservation. In particular, I was expecting pupils, educators, teachers and even volunteers when speaking about the learning objectives of the activities, to mention the significance of understanding the importance of plants, or the need for plants' conservation, and also understanding the importance of botanic gardens' work. It came as a surprise to me that, on the top of the list of the visits' learning objectives, was meeting national curriculum requirements. As cost is a decisive factor when organising a school visit, this establishes a client – provider relationship between the gardens and the schools and the need to satisfy the client's expectations, as it has been noted previously. The dominance of the national curriculum requirements over

environmental issues has been found in other gardens. Jones (2003, p. 120), in her doctoral thesis, investigated the educational experiences offered to young people in Birmingham Botanic Gardens and noted that the 'national curriculum structures the communication of environmental knowledge at the garden to formal education groups in ways that fulfil certain requirements of the curriculum'. In addition, Stewart (2003) in her research on primary and secondary schools visiting the Royal Botanic Gardens in Sydney, found that, although botanic gardens are concerned with raising public awareness on plant conservation and behaviour that promotes sustainable development, teachers do not often choose to explore those themes at the gardens even though they are apparent in school syllabus documents and in the lesson programme offered to schools by the gardens. Teachers may chose as visit topics plant diversity, plant adaptation/structure, plant evolution, but they tend to isolate outcomes relating to plants and environments from any association with relevant environmental issues or concerns for human impact on environments. The study suggested that the teachers did not see their excursion as being concerned with these issues (Stewart, 2003).

At Wakehurst it was mainly the head of the learning programme, Jean T., who referred to the need to keep conservation messages in mind, but the gardens' mission rarely came up in other interviewees. Characteristically, Jean T. explained that, now that she has moved up in the management sector of the learning programme, she will not be the one to develop the details of new activities, but she will give the main ideas to the educators, and will also make sure that the content of the activities will combine the school's perspective with the perspective of Kew and its mission statement.

One of the few occasions that an educator referred to the need to fulfil the garden's mission through education work was when Michelle, during Cherry Tree Primary class 4 visit on trees mythologies, insisted on doing a presentation on rainforest structures and functions to the pupils. The school teacher had only requested a workshop on rainforest music because at school the pupils were studying rainforests so she suggested that there was no need for a talk on rainforests. However, Michelle, in a theatrical way, incorporated the scientific knowledge on rainforest into the activities, and argued that at the back of her mind she always has the gardens' mission statement and she will try to convey the messages in a fun way. In my interviews regarding the activities organised when botanic gardens and local schools collaborate, I found the importance of having explicit learning objectives was highlighted by the school teachers. My research indicates that if the botanic gardens aim to fulfil their institutional mission through their educational role,

they should build that aim more explicitly into the educational activities and negotiate fulfilling the mission through the collaboration with schools. Of course, the argument does not imply dismissing the importance of addressing national curriculum requirements, as that is an important element in the collaboration of botanic gardens and schools and so the educators need to consider the wider context of schools' work and the educational goals they have to achieve.

8.3.3. Bringing more visitors to the gardens

One of the 'painstaking' issues not only for the learning programme, but for botanic gardens in general, is bringing visitors to the gardens. Achieving high visitor numbers is of great importance as it justifies the garden's activities and consequently the need for funding to continue their work. This situation is especially important for Kew Gardens (both in Surrey and West Sussex) as they are funded directly by the government through Defra (Ministry of the Environment), and one of the ways of showing that their funding is well invested is by achieving high numbers of visitors, part of which is achieved by the school visits. Of course, that pressure of achieving high visitor numbers, means giving a priority to the quantity as well as the quality of education provided for the schools. Kate A., who is responsible for the educational work at Kew Gardens, described one of the projects she did with the schools which entailed creating sculptures based on British biodiversity. The project entailed a high level of interaction between the gardens and the schools rather than a one-off occasion. In terms of impact Kate A. referred to one of the comments she received from a boy: 'well Kate it's a nice garden, I thought I might bring my mate and have a look at the garden'. But long term projects do not bring big number of visitors to the gardens as the following excerpt explains:

> **Kate A.:** I would explain the whole project to other botanic gardens educators and they say 'Kate you know but our director wants numbers'. You know can we get that number up from 86,000 to 92,000. Well, we could, but so what? You know. …apart from 'I want to do it', what's the value. Apart from showing DEFRA that we have lots of school visits give me more money or something like that. And they say, well, you don't have the luxury doing long term projects. And I say it depends what you want to get out of it. In a way for me it has to be a balance between the longer term stuff, and what seemingly comes out of it, as opposed to a quick hit which I don't know if it has a kind of impact or not. So it's a balance you have. It's an interesting thing in botanic gardens 'cause they are under pressure to do a lot (so that to meet the) targets (Meeting with Kate A., 13/4/2006).

Kate A.'s account shows the context within which botanic gardens operate and the standards on which their work is evaluated, but it also shows how educators' own vision of education in botanic gardens may become restricted due to the organisation's structure and the targets. Merriman & Brochu (2009) have argued that most educational and interpretative programs in free-choice learning evaluate their progress based on output objectives, i.e. numbers of visitors, numbers of resources produced, and the number of activities offered. While this indicates the organisations' efforts, it gives no information on the effectiveness and the impact of the programmes.

Jean T., explained that because of school visits, the number of general public visits also increases, which can be attributed to pupils coming back to the gardens with their families after a school visit. That fact has been also confirmed by a Elm Tree Primary teacher who noted that pupils who were interested in the Wild View project at school were telling her that they visited the gardens with their families and looked at information that Wakehurst's visitor centre presented about their school project.

A good relationship with schools, including local schools, is regarded as essential for justifying botanic gardens' work, especially in terms of visitor numbers. It can be said that the gardens depend on the schools for justifying their funding as they can prove through the number of school visits that they bring visitors to the gardens. As has been noted, the need to justify numbers may have an impact on the kind of educational activities encouraged as part of school – gardens collaborations as, it seems, there is a tendency to pursue school visits rather than more long-term projects that involve fewer numbers of individuals but which may achieve a stronger impact through communicating their messages. Conversely, it could be also argued on educational grounds that more pupils should have the opportunity to visit the gardens, rather than a selected few involved in long-term projects. So, the dilemma for the gardens' educational policy is whether to achieve larger numbers of pupils' visiting the gardens, but with limited impact, or having fewer numbers of pupils participating in longer-term projects, but with deeper impact (Rickinson, 2001).

8.3.4 Developing the Wakehurst learning programme

The development of the learning programme depends on contact with local schools as Wakehurst has a more stable relationship with these schools (due to physical proximity) and the educators feel more confident and adventurous to try new ideas. In addition, because the school teachers know the potential of Wakehurst, they will ask and give ideas for new activities that will suit their needs. Creating new activities with the school's collaboration has been described by Margaret as an exciting process:

> **Margaret:** Cherry Tree Primary has challenged us over the years. One year they wanted to do Rocks and soils. Well, we haven't got very many things here but I did that one, so we went on a trail and I found various rocks and soil types. But the highlight for them was looking at that single beech outside the seed bank, the pebbles, they thought that was wonderful so you know, different. And I know they wanted to do WWII one day, and Heather did that. She looked at plants and recipes that people had to manage on when there was food rationing and things like that. So it's amazing what we can do, and that's really exciting rather than dishing out the same things every time (Interview with Margaret, 6/3/2007).

The fact that the schools are local enables the educators to test their newly developed activities with them and make sure that they suit the teachers' standards and have a positive impact on pupils. Michelle, a Wakehurst educator, described how, when she wants to test newly developed activities, she will choose to invite local schools where she not only knows teachers, but also where they have easy access (i.e. walk to the gardens or can arrange parents to transfer the pupils to the gardens using their private cars).

The fact that local schools have a more continuous relationship with Wakehurst, which includes repeating activities they have done in the past in the gardens, gives the opportunity for improving those activities by giving feedback on how they were implemented previously. In addition, one of the educators commented that being employed part time in the gardens means it is difficult to improve activities, and easy for the mistakes in a developed activity to continue. Part time work patterns mean that the staff focuses more on delivering the scheduled visits and this does not allow time to reflect on the activities, request feedback and have a more coherent plan for improving the educator's practice. However, a stable collaboration between the school and the gardens, especially when relationships between educators and teachers develop, can mean that the

educators can obtain feedback on what happened on previous visits, and improve the activities, as I have shown in Chapter 7, with the example of Joyce's relationship with Michelle and Heather (p.231).

8.3.5. Contributing to publicity events raising the gardens' profile

Whenever Wakehurst organises events to show the value of the gardens and suggests that its future funding should be safeguarded, part of the events include presenting the work of the learning programme. For that reason it is usually the local schools that are invited to participate in initiatives such as the Billionth Seed project, or in other cases they may have special guests in the gardens and the local schools will be invited to participate. During a meeting I had with Wakehurst educators, the head of the learning programme highlighted the importance of encouraging the strong relationship of the gardens with the schools, and especially with Cherry Tree Primary, because it is not only the schools that benefit from what the learning programme offers, but also Wakehurst, especially when they need a school's contributions to events. When educators contact the schools they feel confident that they will respond positively. 'It works both ways' that kind of relationship as one teacher commented. The schools' contribution in these events is usually based on their commitment to the collaboration with the gardens which is a factor contributing to the success of the collaboration (see Mattessich *et al.*, 2001; IMS, 1996).

Hord's (1981) two models of organisations working together become meaningful when you look at the different projects that the Wakehurst – school collaborations entailed, and at how the organisations depended on each other and the different levels of involvement and commitment. Hord's (1981) 'cooperation model', applies when two individuals or organisations reach some mutual agreement, but their work together does not progress beyond this level; his 'collaboration model' applies when there is the development of a mode of joint planning, implementations, and evaluation between individuals or organisations. For example, projects such as the Billionth Seed entailed the educators doing the planning of the programme, providing the resources including people and specimens, while the project took place in the school. The audience was the pupils, whose work, including a writing task in relation to seeds conservation, was then used at the visitor centre. Here, the product of the collaboration was used only by the gardens. That project fits more into Hord's 'cooperation model'. Conversely, with school visits and especially where

there is an established relationship between the educator and the teacher, there is a more balanced input into the project from both partners. There is also a shared vision and goal about the educational objectives of the visit, established communication methods, and a more balanced input of resources. Both teacher and educator commit their time and resources to the collaboration, they take the decisions together, and they agree on the outcomes which include pupils' learning about plants and the environment, thus contributing to both the schools' and the gardens' mission. For example, Michelle and Joyce's way of working together clearly fits within Hord's (1981) 'collaboration model'. What is important here is not to argue that Joyce & Michelle's collaboration model is better than the cooperation model that represents the Billionth Seed project, but rather to acknowledge that different projects may need different levels of involvement between the organisations. By clarifying which model fits better according to the projects' purposes, respective expectations are set in terms of the role of each partner and the outcomes of their work together.

8.4. Creating links between environmental learning experiences in school and in the gardens

The need for research on how learning experiences in school can be linked with learning experiences out of school; challenges for the researcher

A literature review on outdoor learning highlighted the need for more empirical and theoretical attention to the relationship between indoor and outdoor learning (Rickinson *et al.*, 2004). The relationship between indoor and outdoor learning is a phenomenon that I struggled with in finding the best way to investigate; and learning itself can be a difficult concept to grasp. My initial thoughts were that by being in the school class before and after the visit, and observing activities, I would be able to identify the links between what is happening at school and the experiences in the gardens. Identifying the links has two aspects. The first is identifying the convergence of the teaching points made by the teacher at school and the educator in the gardens. The second is identifying whether the pupils understand the links and possible effective ways to enhance their understanding. Even finding the relevance of the class activities proved to be challenging as the following excerpt from a discussion with Joyce, a Cherry Tree Primary teacher, reveals:

> **Researcher:** I would like to come to the class and observe if you do anything linked to the visit.
>
> **Joyce:** I won't be doing anything directly linked to it. I am linking all this like a cohesive thing, so I won't be saying right tomorrow…I mean you are welcome to come and see how it links, if that what we are doing in class, is then expanded upon a different way by Wakehurst (Discussion with Joyce, 12/7/2006).

What is evident from the excerpt was that even identifying which class activities would be worthwhile observing was difficult. In addition, the teachers' hectic schedule was another obstacle during my communication with them. Owing to the ethnographic methods I employed during my research, I gradually managed to get better access to the classroom activities in the hope of finding potential links with the garden visit. On rare occasions during school activities the teacher, by nodding to me, would indicate that they were teaching issues that would be further explored at Wakehurst. In other cases the links were not made in an obvious way. Usually the teachers and educators in interviews, would be more specific about the links. Regarding the pupils, in the beginning I was expecting that I might be lucky enough to record their spontaneous comments either in the school class or in the gardens, where they would indicate that they understood how their environmental learning experiences were linked with their learning in schools. I did manage to get that kind of indication, but only on rare occasions. The other way I obtained evidence of pupils' understanding was through my interviews. One of my main criteria for identifying successful links between experiences in the gardens and school was pupils identifying these links during the interviews, or teachers describing evidence that the pupils were able to link the experiences and transfer learning from one situation to the other.

Interdependency of schools and gardens, and implications for linking environmental learning experience across contexts

As I have explained in this chapter, the gardens depend on schools in a variety of ways, and in order to maintain their relationship with the schools they try to satisfy schools' needs. For that reason Wakehurst has placed much emphasis on developing the learning programme in accordance with the national curriculum. The educators are former teachers, hence, they understand what the schools are asking for. The development of that kind of interdependency is the basis of the school – gardens collaborations, and is a promising basis for linking experiences

in school with experiences in gardens so as to enhance pupils' learning. I found much evidence of successful links during my fieldwork; almost all of the visits from the three schools were totally related to the experiences in the school in the three ways that have been identified by Dillon *et al.* (2005) i.e. curricular, cross-curricular, and extracurricular. The visits were organised at the beginning, during, or at the end of the relevant work that the pupils were doing at school.

One example of a successful link between environmental learning experiences in school and in the gardens comes from the Oak Tree Primary Yr6 pupils' end of summer term visit to Wakehurst which was based on Habitats and food chains. In the school, the pupils had finished their SATs exams, and the teacher said that the visit involved them 'putting their learning into a real context'. The pupils at the school had been investigating their school grounds habitats having started with identifying plants using keys. During the visit to Wakehurst the pupils investigated the gardens' habitats with activities such as pond dipping, mini beast identification, and a terrestrial mini beast hunt that included comparing habitats. When they were back at school, the pupils continued investigating the school grounds by focusing on mini beasts using techniques they used at Wakehurst. They compared the habitats they investigated at Wakehurst and in the school grounds. The teacher explained how the pupils were able to apply what they learned at Wakehurst. For example, at Wakehurst they used special nets which were like trays, to catch terrestrial mini beasts. When they went back to school they did not have the same equipment, so, the pupils decided to use large pieces of white paper shaped like the trays they used at Wakehurst. The pupils clearly acknowledged the connection of their experiences at school and Wakehurst.

> **Researcher:** have you done anything in the class that was similar to what you did at Wakehurst?
>
> **Brad:** we are going to improvise all the things we did at Wakehurst. Compare bugs, those that live at Wakehurst and those that are in our school grounds…collection, comparison, observation, classification
>
> **Ivy:** we are going to collect them, and then we are going to compare them, then we are going to observe them and then we are going to classify them.
>
> **Violet:** when we will be comparing, if we find ants we could say are these ants like what we found at Wakehurst? Is it the same habitat or is it a different habitat?
>
> **Researcher:** did you do anything at school related to your visit?
>
> **Violet:** yea, cause our topic is mini beasts so we studied wasps and bees but we haven't really got the equipment
>
> **Brad:** and we were over the school grounds and we were like observing different kinds of plants, where they live (Interview with Yr6 Oak Tree Primary pupils, 27/6/2007).

The pupils were able to transfer the skills they learned at Wakehurst to the school content in order to investigate the school grounds minibeasts. During the interviews they identified that their environmental learning experiences at Wakehurst were linked with their environmental learning activities at school as they were both on the same topic and they acknowledged that they could extend their learning by comparing what they learned in both settings. The pupils also said how important it was to go to Wakehurst as they did not have its specialist scientific equipment in school.

A lost opportunity of linking in-school and out of-school environmental learning

Another interesting case in relation to linking the school curriculum with a visit to Wakehurst came from Cherry Tree Primary class 3 visit in spring 2007[29]. The class was studying Rocks and Soils, as part of science. Although John, the teacher, referred to the science topic during his brief phone planning meeting with Wakehurst educator Kelly, in the end the educator decided to schedule the visit in relation to plants. However, during the visit I observed that the pupils focused on parts of the gardens related to rocks and soils. I discussed my observations with the teacher who attributed the pupils' focus during the visit, to the fact that they studied the topic at school and also, he attributed other comments pupils made during the visit to work in English on a book called 'My Pebble'. John said that he regretted his decision not to be more involved in organising the visit. The educator also acknowledged that the pupils referred incidentally to their school learning during the visit: 'It did come up on the trail because when we talked about mulches they said oh we've done that, we've talked about the soil'. This is an example that illustrates a lost opportunity for linking the in school and out of school experiences owing to the rather weak collaboration between the teacher and the educator.

Falk & Dierking (2000) identified a number of factors that influence learning in museums. These include: the individual's 'prior knowledge, interests' and 'choice and control'. In this visit, the pupils used their knowledge and interest from their school lessons to choose and control their further learning during their experience at Wakehurst, and focus their attention accordingly.

[29] A brief reference to what happened during that visit has been made in Chapter 6, Possible problems because of the history of collaboration.

Barron (2006, pp.200-201) developed a learning ecology framework to understand how learning outside school relates to learning within schools and he based the framework on three conjectures which are highly relevant to my research:

1. Within any life space, a variety of resources (e.g activities of other people, conversations, books, etc.) can spark and sustain interest in learning
2. People choose, develop and create learning opportunities for themselves when they get interested, assuming they have time, freedom and resources to learn.
3. Interest-driven learning activities are boundary-crossing and self sustaining.

What happened with the class 3 pupils was that their environmental learning experiences in school which included learning about rocks and soils, and reading a book on that subject, sparked their interest. When they visited the gardens, because of this interest, and as they had the available resources in the gardens, they decided to create more learning opportunities for themselves during the visit. Their interest-driven learning activities crossed the boundaries from school to gardens. Unfortunately, although they were able to link their learning in school with learning in the gardens, based on their own interest and choice, this was not followed through during the visit which remained structured and focused on pre-determined learning outcomes. In contrast, the previous example of Oak Tree Primary Yr6 pupils' summer visit, showed that their interest in the investigation of minibeast habitats had been instigated through pre-visit activities in school. This was followed up during the visit to Wakehurst, and then the pupils were able to go back to school and complete their environmental learning experience by comparing their school grounds habitats with the Wakehurst habitats.

Class 3's lost opportunity should be attributed to factors that were not present during this collaboration such as effective communication, understanding the school's needs in relation to the curriculum, concrete and clear objectives, a shared vision, and members sharing a stake in both process and outcomes (see Mattessich & Monsey, 1992; IMS, 1996). A further point is that the teacher was newly qualified and not as assertive as he might have been in relation to his teaching goals and what he would like to gain out of his pupils' outdoor experiences. The educator also did not have lengthy experience in the gardens and she misjudged how essential it is to satisfy the school curriculum during the visit. I would add that she possibly chose to implement activities she was feeling more confident about doing, rather than the Rocks and Soils activities which were rarely used and required more preparation. So, here the teacher's and educator's limited professional experiences also played a key role in how the collaboration went.

History of collaboration contributing to creating links between school and out of school environmental learning experiences

Having highlighted the interdependency factor in relation to linking school and gardens experiences, I will now continue to explain how the history of collaboration has a positive impact on the creation of these links. For the schools, the fact that they were local and had a closer relationship with the gardens that had developed over many years, meant that the teachers knew what to expect from a visit to the gardens and how better to connect it with their work in school. It is as if the teachers were entering a community of practice as Wenger (2005) characterises when people engage in a 'process of collective learning in a shared domain of human endeavour'. That kind of situated, social learning occurs during the collaboration of teachers with the gardens educators. As more collaborative efforts occur, all the participants know not only how better to collaborate, but also how better to use the outcomes of the collaboration in their own practice. In an ideal world, new teachers who enter the collaboration with Wakehurst and their school, come to learn gradually through their interaction with the educators and by organising and participating in the visits, how better to organise their visit next time, and how to link it more effectively with their teaching in the school[30].

Here, the collaboration can be regarded as providing fertile ground and a conducive environment for learning. Wals & van der Leij (2007, pp.18-19) identify that process as social learning, which 'takes place when divergent interests, norms, values and constructions of reality meet in an environment that is conducive'. Furthermore, they suggest that social learning can take place at multiple levels: the individual, the group, the organisation, and at network level. According to my research, social learning takes place during the botanic gardens – school collaborations which give the opportunity for teachers and educators to learn from each other, understand the formal processes e.g. planning meetings that they need to follow, and also to develop their own more informal and personalised ways of communicating and working together. The learning continues during the implementation of their joint working, and in a way is only complete after the project during a reflection process that they may go through individually or together. Moreover, it is not

[30] Although most teachers learn how to collaborate, some can lose their enthusiasm for the visits and do not implement what they have learned, and/or they become overwhelmed by their workload within the school and the pressures to ensure pupils' achievements so that they do not have time to devote to the collaboration.

only teachers' learning from educators, and vice versa that takes place here, but also teachers' learning from other teachers how to collaborate better with educators, and educators learning from educators how to collaborate better with teachers. Social learning does not occur always explicitly; for example, it can happen by teachers and educators discussing and explaining ways that they can work together and what kind of environmental learning they can offer to pupils, and also by observing each other's practices. Social learning, according to Wals & van der Leij (2007) may also increase an individual's or a group's capability to participate in the resolution of personal or organisational issues. In the example that follows, social learning enabled the teacher to improve the way she organised her class visit to the gardens, and reflect on how to use the visits better in her teaching at school in the future.

Esther, was a new teacher of Cherry Tree Primary class 1 in the school year 2006-2007. She visited the gardens in two combined visits with her class, and with class 2 pupils. Those visits were mainly organised by Karen, the class 2 teacher, while Esther had a less active role in the planning. However, from those experiences she came to understand how she could become more involved in the planning of the visits, and link them in a better way with her work at school. That was a social learning process for Esther and as a result, at the end of the year she organised a visit separately for her class on the topic of Plants and Growing, linking it in an extended way with her classroom teaching in collaboration with Kelly. Included in the school activities on Plants and Growing, the pupils were using a role play area in the class developed on the theme of a flower shop, and they also discussed how they could improve the outside area of their class by planting. During the visit, amongst other activities on plants and growing, the pupils went to the gardens' plant shop where the gardener introduced them to how the shop works, and then with the adults' help they chose and bought plants for their play area at school. When I interviewed Esther, she provided evidence of pupil learning in the gardens which they applied at school:

> **Esther:** part of my classroom is always incorporating some role play and prior to this topic, I've been observing them the last two terms and they haven't been using the role play as part of their play. I've read some research which says 'ok, if that's happening change it; it has to be a real life experience so then they have to visit somewhere and to make it meaningful'; so if it was a supermarket for example (the role play area), they need to go and visit a supermarket and see how things work. I wanted a flower shop, so part of the Wakehurst trip in my thinking was, they need to go to the flower department, to buy flowers, to understand what happens, and since that trip they have been using that flower shop brilliantly; they have their flowers, they got their till, they buy, they sell flowers to each other, it's working really really well. They've written notes for their shopping list,

> and they are interacting with each other in there; a lot better without adult supervision (Interview with Esther, 9/5/2007).

That excerpt shows Esther's professional ambition to improve her practice using research findings, to pursue her aims through the collaboration with Wakehurst. Kelly, the Wakehurst educator, despite her lack of experience as an educator which previously had had an impact on the success of some of her interactions with other teachers, demonstrated that she was willing to experiment with new activities and organise something she had not done before. Crucial in this case was Esther's input into the design and implementation of the activities. Such flexibility in structure and methods are factors that have been reported in the literature as contributing to the success of interorganisational collaboration (Thorkildsen & Stein, 1996; IMS, 1996).

Esther's account also provides information about the process of learning for the teacher, the educator and the pupils. Esther pursues her own learning as part of professional development by reading research. Kelly learned through collaborating with Esther how to develop innovative activities that meet the need of the pupils. And the specific example shows how real life experiences as part of the out of school classroom education can reinforce the within school experiences. Moreover, Esther said that the pupils went back to school after the visit and used the role play area differently without adults' supervision. That implies that they were able to apply their learning experience in the gardens in school in a more free-choice learning way, based on their 'interest, choice and control'. Falk & Dierking (2000) suggest that an individual's 'interest and choice and control' are factors that influence learning in museums. It should be noted that, by providing pupils with learning experiences that can spark their interest, such as their visit to the gardens, and then allowing them more free-choice about their learning within the school as a follow up, is very important for pupils' personal development. Of course, pedagogy is easier to implement with reception pupils as the curriculum for that age is more flexible, and encourages less structured and less controlled learning experiences.

Esther also explained that the next time she organises a visit to Wakehurst she would include it from the beginning in her teaching plan at school as part of her topic work. Esther's suggestion is also supported by the literature on outdoor education. For example, Orion (1993) developed a three stage model for planning and including a field trip as an integral part of the curriculum (see Chapter 3, figure 3-5). However, Orion's (1993) research looked at how a field trip can be linked to a distinct curriculum subject, while in my research I found equally effective cross-curriculum

approaches which do not always link the field trip with the curriculum in such a distinctive way, with science for example. Instead, the teachers created a more holistic approach, building links between the field trip and a variety of subjects on the same topic.

Building individual collaboration and linking school and out of school environmental learning experiences

Having discussed the role of history in the collaboration and linking 'in school' and 'out of school' environmental learning experiences, I now explain the importance of building strong relationships between educators and school teachers. When the organisation of a school visit is the result of high involvement between both educator and teacher, the result can be very creative activities which include strong links between what goes on in the class and what goes on in the gardens. The pupils, in these cases were able to identify the connections during the visit, but were also able to acknowledge them afterwards during the interview. An illustration of that is the collaboration between Michelle, a Wakehurst educator, and Joyce, a Cherry Tree Primary teacher. Joyce, having collaborated previously with Michelle, knew that together they could create activities during a school visit that would be based on the pupils' school work at that time. Joyce did not plan any distinct preparation and follow up work in relation to the visit; instead, the school visit was built into her school topic. For the Cherry Tree Primary class 4 summer visit to Wakehurst, Joyce had a phone conversation with Michelle and discussed what the pupils were doing in the class and potential links they could build on in the visit. The schedule of the visit comprised an introduction on the rainforest through a power point presentation, creating rainforest music using instruments made from natural materials, pupils enacting parts of an Indian tale that the educator narrated, and a trail where the educator was telling myths and facts about trees in the gardens. In the end the pupils were split into groups and created their own stories around the trees and performed the stories dressed up in front of the other pupils. The activities linked very well with a variety of subjects from English and geography to religious education and the focus on drama in school, all of them based on the cross curriculum topic of India, Hinduism and rainforests. During the tree mythologies one of the plots the pupils decided to re-enact was based on something they knew from school, a myth from Indian tradition. The pupils not only brought their school learning into the gardens, but after their visit were able to identify the links:

Researcher: would you like to see some pictures and discuss about the activities?

Daisy: we had to make a play how the tree name originated. We did the story of Ganesh, well, my friend Daphne she said that the base of the tree looked like an elephant foot, so, it kind of developed on that

Ethan: 'cause Ganesh had his head chopped off, and the only thing it was replaced was an elephant head

Researcher: where did you learn this story?

Rosemary: their play has a Hindu god in, and we are learning about Indian gods at school

Researcher: what about rainforests. Is there any connection with rainforests?

Ethan: no

Researcher: what about India? Do you have rainforests in India?

Rosemary: oh! I know what; the Chembakolli village which we are learning about with Mrs Roberts (teaching assistant), it's near the Equator, and that's where the most of the rainforests are, and that's why we learned about rainforest at Wakehurst (Interview with class 4, 25/05/2007).

The pupils were able to transfer their learning from school and use it as an inspiration for their learning experience at Wakehurst. What was important in this instance was not only that the pupils used their previous experience for their learning in the gardens, but also what Falk & Dierking (2000) refer to as the sociocultural mediation of learning. Specifically, it was one of the pupils who linked the gardens environment with the Indian story they learned at school, and then the group further developed the rest of the story for the activity in the gardens. This 'within the group sociocultural mediation' (Falk & Dierking, 2000) is based on Vygotsky's (1978) theory on the social construction of knowledge. Moreover, Wason-Ellam (2010, p.290) suggests that 'it is through exploratory and collaborative cognitive and embodied activities that dialogic opportunities lead to the co-construction of meaning and knowledge, which can be facilitated among children, peers, teachers and others jointly, involved together'. The tree story-telling activity at Wakehurst fits very well with Wason-Ellam's argument. The pupils went on a trail in the gardens during which Michelle told them facts about a variety of trees. Then, working together in small groups, the pupils used their imagination, the facts on the trees, and their previous experiences such as their learning from school to create and enact their short stories.

Bringing together my research findings and the literature on the relationship of in-school and out-of-school environmental learning experiences

Dillon *et al.* (2005) conducted a qualitative case study of effective practice, observing teachers and students at work in school grounds, on farms and in outdoor study centres across England. They did not find much evidence of preparatory work at school before the outdoor experiences, apart from cases of residential visits or when outdoor educators were funded to undertake outreach work in schools prior to visits. Also, although teachers identified connections between the school visits and several subjects, they suggested that they would have liked their follow-up work to have been more extensive than it had been, and there was no evidence of pupils identifying links between the outdoor experiences and in-school work. The research acknowledged a number of challenges for curriculum integration, and suggested several areas to develop in order to tackle the issues. However, the three factors I have identified as contributing to the success of Wakehurst collaboration with local schools, i.e. interdependency, history of collaboration and developing individual collaboration, I suggest can answer the challenges for connecting out of school experiences with school learning (see figure 8-3).

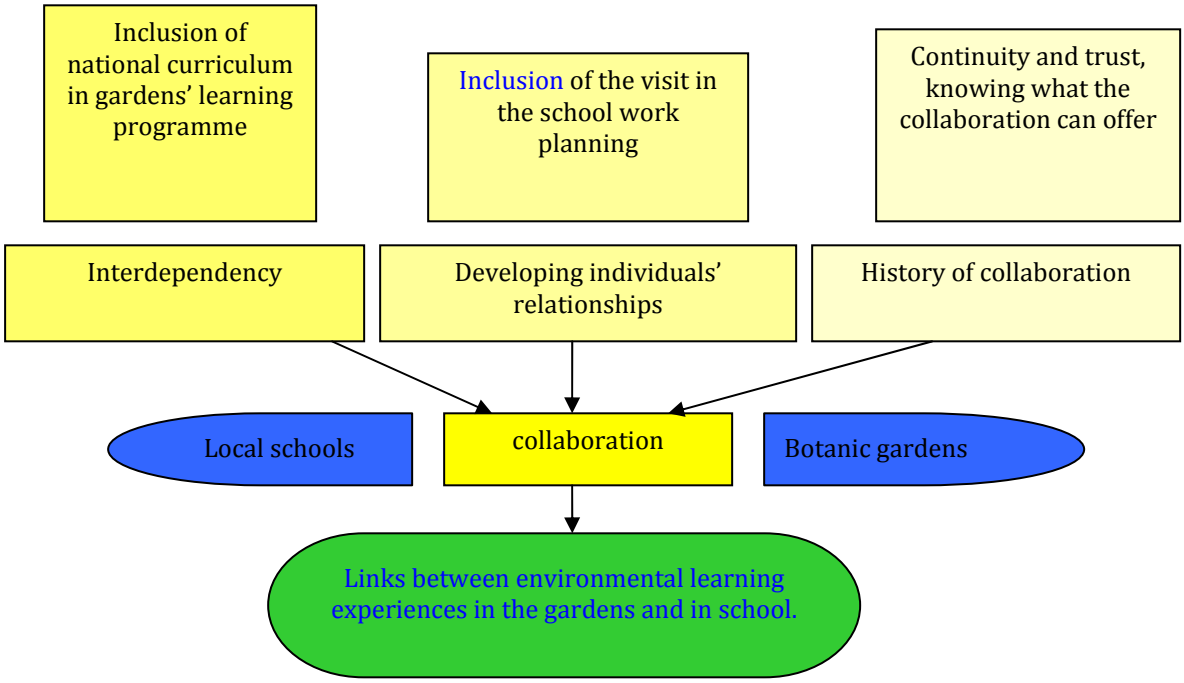

Figure 8-3 Contributors to connecting school and out of school environmental learning experiences during the local schools' collaboration with botanic gardens

Interdependency

An interdependency has been established between Wakehurst and local schools. Importantly the Wakehurst learning programme has been developed according to the national curriculum and the educators' background, and training has been appropriate for understanding schools' needs. Moreover, the fact that the gardens have established a long term relationship with the local schools means that the teachers know what the gardens can offer them and the best way to communicate what they need.

Developing individual relationships

The teachers and educators in my research had established a routine of annual activities in the gardens either for the whole school or for one specific year group. The planning meeting between the educator and teacher was the best way to clarify the purpose of the visit in relation to the school work. Evidence suggests that the most effective way that links between school and gardens' environmental learning experiences were achieved was when teachers and educators developed a personal relationship. In those cases, highly creative activities were tailor-made for the school visits and linked with a variety of curriculum subjects. Most importantly, the teachers did not plan distinct preparatory or follow up activities in class related to the gardens visit. As they had collaborated in the past with the educators and knew what they could achieve through a school visit, they included the visit in the early planning of the school topic. That way a continuum of experiences in school and out of school on the same topic was achieved. I found strong evidence during the visits that the pupils could bring learning from school, and also that they could apply knowledge they learned in the gardens back at school. Furthermore, during my interviews, the pupils identified how their school work was connected to the activities they did in the gardens.

History of collaboration

My suggestion for achieving links between environmental learning experiences in the gardens and in school would be to encourage schools to develop more stable, continuous relationships with their local outdoor education settings, and allow teachers to build personal relationships with educators. In other words develop a history of collaboration. This finding is congruent with, but also expands further, Stewart's (2003) suggestion that teaching in the gardens should take into account students' prior understanding about, interest in, and experience with, plants and the environment. Stewart specifically proposed two ways that educators are able to gain insights into their visiting students' previous knowledge and build on that: by discussions at the start of a

session, and from information provided by the classroom teacher before the excursion. My research showed that these sorts of discussions are best achieved as a result of established relationships between educators and teachers.

Figure 8-3, which summarises the contributors to connecting school and out of school environmental learning experiences during the collaboration of local schools with botanic gardens, could also be seen as an answer to a discrepancy highlighted in the literature (Anderson & Zhang, 2003; Kisiel, 2003). The authors point out that teachers stress the importance of the curriculum fit for visits to outdoor education settings, but they tend to not incorporate preparatory or concluding activities in the classroom to link the visit experience with their classroom teaching.

My data analysis does not presuppose that pupils' environmental learning experiences are exclusively the result of botanic gardens – school collaboration. Rather, I explored how the collaborations may influence the shaping of the environmental learning experience in combination with how the pupils' themselves perceive their experiences. That way I was able to identify situations where the pupils pursued, in a more free-choice way, their learning in the gardens, having been inspired from their learning in school. Interest, choice and control of the learning, and previous knowledge and experiences, are all factors identified by Falk & Dierking (2000) within the personal context of a visitor's free-choice learning experience in a museum, and they were also present in some of the environmental experiences in the gardens. Rickinson *et al.* (2009, p.64) argued that

> learners' ideas of relevance appear to have a strong bearing on their engagement in learning processes and their conceptual notions of relationships between the various things they learn.

In their environmental learning experiences in the gardens, the pupils in my research identified the elements of the new experiences that were relevant to their previous experiences, and that influenced the level of engagement in activities. For example, when the Oak Tree Primary pupils went back to their school after the summer visit to Wakehurst, where, as part of the curriculum unit they had to investigate the school grounds habitats, they applied the techniques they learned at Wakehurst in their school activity. More importantly, they devised their own tools based on what they used at Wakehurst, and the resources they had available at school. This example is also an indication of their immersion in the experience which was *interesting* (they looked at the school grounds from a different perspective), *imaginative* (they used their imagination to devise

the new fieldwork equipment), and *interactive* (they participated in the experience through embodied action in the environment). See Burbules, 2004.

Falk (2005, p.267) pointed out that 'research shows that the more the separate influential spheres of family, school, work and elective learning overlap in people's lives, the more likely the people are to become successful lifelong learners'. Following Falk's argument, creating links between environmental learning experiences in school and in the gardens through botanic gardens – school collaborations, and the pupils' active participation in the activities, resulted not only in enhanced learning, but also in pupils' development for their future as lifelong learners.

Dewey's (1938) principle of continuity of experience is meaningful in order to understand how environmental learning experience in the gardens is linked with school experiences. The so called experiential continuum means that every experience takes something from those which have gone before and modifies in some way the quality of those which come after. Teachers, in collaboration with educators, are able to identify which curriculum subjects or topics studied at school can be further developed in the gardens and the best way to achieve that. Dewey (1938, p.45) argued that

> a fully integrated personality exists only when successive experiences are integrated with one another. It can be built up only as a world of related objects is constructed.

Roberts (2008) identified a Deweyan approach to experience as an interactive one which underpinned the educators' and teachers' efforts to connect the structured activities in the gardens with pupils' experiences in school. The pupils' behaviour in the gardens and their accounts during the interviews also exemplify the interactive approach to the experience; the pupils identified the links between their experiences in the gardens and in school, they created the links themselves as they transferred the knowledge and skills they got from one context (e.g. school) to the other (e.g. gardens), and even when that was not deliberately encouraged by the teachers and educators the pupils took their own initiative to pursue their learning in the gardens based on what they had learned in school. The examples of the connection between environmental learning experiences in the school and in the gardens show that what the pupils have learned 'in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with situation which follow' (Dewey, 1938, p.45).

Esther, a Cherry Tree Primary teacher, in the following quote very clearly explains her theory of learning, and the process of learning through an experiential continuum between the school and the gardens. Esther does this with a metaphor:

> **Esther:** What learning is, it's like building a house; you put the foundations down but you do not have a house without building on those foundations so you put cement down, you put bricks down and another layer of cement and bricks and that's what learning is about you put your foundations down, then you gradually build on to it. Look at some child's psychologists Bruner, Piaget and Vygotsky they will all tell you learning is a cyclical thing and children revisit and revisit and build on; you build on to where they start off (Interview with Esther, 9/5/2007).

8.5. Environmental issues

Interdependency has been described as the cornerstone of the collaboration between botanic gardens and schools (see 8.1.) when they come together to achieve something they could not achieve on their own, or something they could achieve better if they collaborate, and for that reason the gardens and schools become synergistically dependent on each other. That kind of arrangement brings questions to mind such as what is education *for* in botanic gardens, or what is education *for* when botanic gardens collaborate with local schools? Of course, the provision of some sort of education is the main reason that gardens and schools come together, but, at Wakehurst, that fundamental objective seemed to be taken for granted rather than being open for negotiation. The environmental learning experiences offered, as a result, mainly during the school visits, were based on satisfying the national curriculum. But where does that leave Kew Gardens' mission statement?[31] I consider that addressing environmental issues is one of the most obvious ways to fulfil the gardens' mission statement in collaboration with the local schools. Addressing environmental issues however, is not incompatible with the national curriculum requirements. As Stevenson (2007) argues, it is also the teachers' (and educators' in my research) curriculum and pedagogical ideologies that influence whether and how environmental issues may be addressed.

In the following I look at how pupils' environmental learning experiences are shaped in relation to the gardens' mission, however, as appropriate, links with the pupils experiences in school and

[31] Kew Gardens' mission is to 'inspire and deliver science-based plant conservation worldwide enhancing the quality of life' (Royal Botanic Gardens, Kew, www.kew.org).

at home are actually made. The following categorisation of activities (table 8-1) was devised to show the kind of education that was offered during Wakehurst's collaboration with the local schools in relation to the environment (botanic gardens' mission).

Table 8-1 Categorisation of the environmental learning opportunities offered when Wakehurst collaborates with the local schools

Activities related to understanding the environment, plants, ecosystems	**Activities demonstrating the relationship of people and the environment/plants**		**Activities of capacity building, suggesting human actions for the protection of the environment/plants**		**Activities highlighting the social aspect of the relationship of the environment and humans, sustainability issues**
	Activities demonstrating how human life depends on plants and the environment	**Activities highlighting the impact of human activity on the environment**	**Activities related to consumerism behaviour**	**Activities demonstrating the importance of botanic gardens work**	
e.g. Mini beast hunt, Pond dipping, Structure of plants, Trails on the parts of plants or healthy unhealthy plants, Life cycle of birds-Wild View project, Life cycle of plants etc.	i.e. Rainforest workshop, Plant eater workshop, 'Imagine the world without plants' Shelter building Plant it, grow it, cook it, eat it	i.e. Main activities: Food miles, Recycling In slots between the main activities: 'Imagine the world without plants' Within the main activities: Rainforest workshop, Rainforest music, Shelter building	i.e. Food miles, Recycling, Fair-trade Plant it, grow it, cook it, eat it	i.e. The Billionth Seed project	i.e. Fair-trade

That categorisation was the result of an inductive approach, which included comparing the data with each other. In particular, as I explained in the methodology chapter (section 4.6.2., p.145), I identified the categories by looking solely at the data and without trying to fit them to a pre-existing coding frame or my analytic perceptions. At a later stage of the data analysis process, however, I did compare my categories with categories identified in the literature. I must clarify that my categorisation only concerns activities implemented during the collaboration of Wakehurst and three local primary schools. However, I suggest that the categorisation applies to all primary school visits that took place during 2006-2007 because during my fieldwork I was living in the gardens and I was able to observe other school visits apart from those concerning the three local primary schools. As far as the proportion of the activities within each category is concerned, the majority of the activities I observed fall within the category of activities related to understanding the environment, plants, and ecosystems. Activities related to the impact of human activity on the environment and the social aspect of sustainability issues occurred only rarely. Also, the majority of activities focused on the transmission of knowledge in relation to the environment and plants, and in developing a range of pupils' skills from observation, handling scientific equipment, orienteering, to group work. Also included were other social skills, creativity, and the use of the senses. A few activities were targeting behavioural change, and were related to promoting sustainable individual behaviours such as recycling, buying local food and fair-trade products, and growing your own food, all of them encouraging a healthier and more ethical life style.

There seems to be a fit in the categories developed here with the categories of interest in environmental learning identified by Scott & Gough (2003), based on observations of the North American Association of Environmental Education (NAAEE) conferences over a number of years (see table 3-4 in Chapter 3). Looking at the categories in the table, if we move from left to right, there is a shift from interest in the individual learner to the social context; this was also noted by Scott & Gough. It is also worth noting the categories that Scott & Gough (2003) identified that were not evident in my research. For example, I did not find activities in the gardens related to advocating/promoting particular modes of social change in order to achieve environmental/conservation/sustainability goals. That kind of interest is more related to the Danish work of action competence (Jensen & Schnack, 1997), and represents a more political aspect of education.

The fact that a strong focus of the majority of the activities in the gardens is on transmitting knowledge that increases understanding of plants, with a weak focus on sustainability issues, is also evident in other gardens' educational programmes. Kneebone & Willison (2007) and Oikawa (2000), through their surveys and case study investigations, have pointed out that the majority of educational programmes in many botanic gardens worldwide focus on increasing knowledge about plants, with sustainability issues the least focus of their educational activity. Oikawa (2000) argued that, in terms of environmental education strands, education *about* the environment is the most implemented focus in the gardens.

In the following I shall focus on participants' views about how environmental issues were addressed when Wakehurst collaborated with local schools, and show evidence of pupils' learning in respect of that. I shall also reflect on the justifications given for not addressing environmental issues and will conclude by discussing approaches that are worth exploring within the gardens' educational work. This section aims to explore overall how environmental education experiences for pupils are shaped by the collaboration of Wakehurst and local schools.

8.5.1. Perspectives on how environmental issues are addressed during the collaboration of Wakehurst with the local schools

The activities that were most often seen as addressing environmental issues in the gardens were about recycling and composting. For example, during the Cherry Tree Primary class 2 summer visit to Wakehurst, which was on the theme Habitats, the educator, showed the pupils ways that resources at Wakehurst are recycled, including compost. The class 2 pupils explained what they learned during the visit:

> **Fraser:** she (educator) said we collect cardboard, paper and polythene so we recycle it, and then she said we don't have much polythene
>
> **Charlie:** recycle, reduce, reuse
>
> **Erica:** she was telling us how they have lots of cardboard and paper and they recycle it to keep a nice healthy environment, and they don't have much polythene but they may have some polythene in it
>
> **Hollie:** we saw some eggs
>
> **Researcher:** what were the eggs doing in there?
>
> **Hollie:** try to make it compost (Interview with class 2 Cherry Tree Primary, 14/6/2007).

Here, the pupils emphasised not only what the educator told them, but also that they were able to observe a real life situation, i.e. how in practice the botanic gardens recycle their materials. What was important here in terms of the pupils' environmental learning experience was the sociocultural context (the pupils were taught by the educator), and the physical context (the pupils were learning from observing the recycling process in an authentic context). See Falk & Dierking, 2000, Contextual Model of Learning. I could describe recycling (including composting) as dominating activities in regard to environmental issues, because when participants responded that no environmental issues were addressed during a visit, they added that no issues related to recycling or composting were mentioned. This indicates a rather limited perspective on the concept of environmental issues. Here is an example from a discussion with Cherry Tree Primary pupils, although there were similar responses from the adult participants as well:

> **Researcher:** did you learn anything about caring for the environment during this visit?
> **Daisy:** recycling, it is an important sort of thing they mainly point out when we go there, isn't it? Recycling
> **Ethan:** and the compost
> **Researcher:** yes but did you learn that this time? Did you learn this time about compost and recycling?
> **Children:** no
> **Ethan:** this was more about the rainforests and about the trees
> **Researcher:** so did you learn this time anything about caring for the environment?
> **Ethan:** no, not really, it was more about the trees (Interview with class 4, 25/5/2007).

What is interesting in pupils' accounts is that they recalled recycling and composting as the main activities they learned about caring for the environment even if these were activities they did not see or take part in during the specific visit. In addition, pupils did not recognise links between learning about the environment e.g. about trees and rainforests habitats, and caring for the environment. The recycling dominance was further confirmed when, during September 2007, I went back to the gardens to discuss the preliminary findings of my research. When I asked the educators to think of activities they could develop to reinforce environmental issues during the school visits, the initial discussion was mainly focused on how to introduce more activities on recycling, for example during lunch time. The educators actually considered how they could introduce recycling/composting as a set activity for every visit. The educators' emphasis on encouraging achievable actions such as recycling/composting is associated with the perception that individuals will feel empowered by understanding that their actions can make a difference,

and they may be inspired for larger-scale lifestyle changes (Cleveland *et al.,* 2005 in Ardoin, 2009). In particular, Cleveland *et al.* suggested that easily implemented behaviours may develop individual's self-efficacy and enhance a sense of personal control which may be a predictor of whether they will undertake pro-environmental behaviour in the future. However, Ardoin (2009, p.62) suggests that there is need for a balance 'between encouraging smaller actions that cumulatively have a consequential impact versus feel-good actions with uncertain outcomes'.

In respect to recycling, I had an interesting conversation with Vivienne, the Wakehurst educator responsible for the SAPS (Science and Plants for Schools) project which encourages plant science in secondary schools. Following a school visit to Wakehurst Vivienne suggested that the pupils may be inspired to be active for the environment, but she said there are not enough options for that apart from recycling which was seen to be 'boring'. For that reason, Vivienne developed a project in which students are engaged in saving an endangered poplar species by propagating the species at school in collaboration with Millennium Seed Bank scientists. Also, in terms of the project, Vivienne taught pupils about different propagation methods which is a topic they were studying at school. Students who participate in a 'real' conservation project and see that their actions make a contribution to the environment, develop as a result of what Heimlich & Ardoin (2008, p.227) refer to as their locus of control. In other words they have a perception that they can act effectively through their own behaviour/action which reinforces their future potentials to continue their environmental actions/behaviours. Bandura (1977) has suggested that a person's expectations related to his or her 'self-efficacy' beliefs influences whether that person undertakes a new behaviour, and if so how likely it is that the behaviour will be maintained. Vivienne's educational approach is a good model for other educational programmes developed not only at Wakehurst but also in other botanic gardens.

The other activity, developed at Wakehurst, that has also been most often referred to as addressing environmental issues is 'Imagine the world without plants'. The activity comprises different components of a home, including the people inside and their pets, all attached with velcro on a board. The educator encourages the pupils to think about the components that should be taken away from the board if there were no plants in the world. Following the pupils' responses, the educator gradually removes the pictures from the board which in the end includes the people and their pets as dead with nothing else around them. My research participants referred to the strong impact of the activity. I was taken by surprise when Cherry Tree Primary class 5 pupils recalled the activity 'Imagine the world without plants', which they had been taught years

ago in one of their first visits to Wakehurst. Also, as part of the Cherry Tree Primary class 3 spring visit to Wakehurst, which focused on healthy and unhealthy plants, the 'Imagine a world without plants' activity was implemented. The teacher explained that on the way back to school the pupils discussed with each other the activity, which was an indication of the impact it had on them. When I asked the pupils what they learned during the visit their immediate response was:

> **Basil:** if you didn't have any plants in the wild you wouldn't be alive.
>
> **April:** We had this house with two people in, one Lily and one Basil and the funny bit was if there were no plants they would have no clothes. 'Cause it was what it would be like if there were no plants in the world; they would not have clothes, so they were naked, and at the end the cat died the dog died the woman died, and then the man died
>
> **Dylan:** there was a board with plants and they were talking about if we didn't have any plants we wouldn't have wood, or tables, or anything. And there wouldn't be any chairs, or there wouldn't be any people because there wouldn't be any oxygen
>
> **Fern:** We wouldn't actually have any food to eat if we didn't have any trees
>
> **Dylan:** there wouldn't be any oxygen, so people would be dead 'cause they wouldn't be able to breathe.
>
> **Iris:** if we didn't have any plants we wouldn't have lettuce or tomatoes or anything we wouldn't have any vegetables (Interview with class 3 Cherry Tree Primary, 7/3/2007).

In addition, Michelle, a Wakehurst educator, argued that she is addressing environmental issues by doing the activity 'Imagine the world without plants' in the introduction of many visits, and she was contemplating the idea of having a short activity during the school visits that will encourage pupils to think about environmental issues, where those ideas could be further developed by the teacher back at school. In the same line of thinking, during an educators' meeting there was a discussion on how to have set activities such as recycling or 'Imagine the world without plants' adapted for different age groups which could be used in every visit so that messages related to the gardens' mission would be communicated. The educators discussed the effectiveness of the activity 'Imagine the world without plants' which they attributed to the simplicity of the message that stays in the memory even for the adults that participate in the activity. The activity was described as an eye-opener making pupils realise that so many things derive from plants, and also the adults said: 'even though I knew the answers I've never thought of it like that'.

However, just addressing environmental issues, and raising students' awareness and enhancing their environmental attitudes with powerful activities such as the 'Imagine the world without

plants', does not necessarily equate to students adopting environmental behaviours; not only because of the gap between environmental knowledge and attitudes and environmental behaviours that Kollmuss & Agyeman (2002) has identified, but also because of the lack of a specific focus on an environmental behaviour. Bell *et al.* (1996 in Heimlich & Ardoin, 2008) looking more in-depth at the inconsistency between environmental attitudes and behaviours, reveal factors that change the attitude – behaviour relationship, including attitude specificity, normative influences, and attitude accessibility. Attitude specificity is based on the argument that although having generally positive attitudes toward the environment do not predict whether an individual will take specific environmental behaviours, specific attitudes toward particular problems do have predictive value. 'A general pro-environmental outlook, for example does not ensure that a person will purchase a fuel-efficient vehicle, but a specific concern with climate change may link with behaviours to mitigate that effect, including driving a vehicle that minimises carbon dioxide emissions' (Heimlich & Ardoin, 2008, p.221). The implications of the attitude specificity factor for education in botanic gardens is that if changing behaviours is within the gardens' mission, then the general environmental messages they communicate should be paired with specific attitudes towards particular problems. In the case of the activity 'Imagine the world without plants', that would also refer to specific attitudes that individuals could adopt to contribute to plant conservation.

Other activities that the participants suggested where environmental issues were addressed were the rainforest workshop, rainforest music, and food miles. These activities communicated messages such as dependence of people on plants, and also the impact of human activity on the environment. More importantly, the pupils identified those messages during my interviews. For example, during Elm Tree Primary Yr4 pupils' visit that was based on the Rainforest, the pupils responded:

> **Researcher:** did you learn anything about environment? Caring about the environment?
> **Rose:** yeah, that they are cutting the rainforest down and they are growing the palm oil palms. She showed us a picture of what had happened.
> **Denis:** yes, there was a picture of the rainforest being cut down.
> **Lily:** one of the ladies told us that the rainforest was beginning to get smaller and smaller each year because people cut down the trees to make farming land and houses
> **Jasmin:** I do know now that they've stopped getting wood from the rainforest, and that was because of the lack of wood. So they are looking to other places to get wood from (Interview with Elm Tree Primary Yr4 pupils, 25/6/2007).

In this example, the pupils were able to confirm that, as a result of the specific activity, they were aware of rainforest depletion due to human activities. That knowledge, however, does not necessarily mean that the pupils will take any particular action to contribute to rainforest protection either directly or indirectly. According to behavioural theorists, cognition can contribute to action provided it is combined with emotions, values, the acquisition of the appropriate skills, and opportunities for taking action (Heimlich & Ardoin, 2008). So, based on Heimlich & Ardoin's work the educators during the particular activity could encourage further discussion on how individuals may contribute to the rainforest conservation through their everyday choices, e.g. by not consuming products that contribute to the rainforest depletion and/or by supporting NGOs and other organisations that work with local communities in rainforest areas to encourage sustainable use of the rainforest resources.

Another activity mentioned by a few participants was the Billionth Seed project that highlighted the importance of seed conservation at Wakehurst. However, when I asked what they learnt, most participants remembered mainly looking at the biggest and the smallest seed in the world. This may have been because my interviews took place nearly two months after the project was carried out. However, one pupil was able to recall the work of Seed Bank as a result of the educator's presentation:

> **Jasmin:** you collect seeds so that in rainforests and other places they don't become extinct or later they don't become extinct. They may become extinct in those places but you always have the seeds so you can send some back there (Interview with Elm Tree Primary, Yr4 pupils, 25/6/2007).

The Billionth Seed project is an interesting example of how the organisation pursues fulfilling its mission statement and the role of education within this. Ardoin (2009) questions whether institutions that provide opportunities for free-choice learning should aim to change individual actions or try to influence organisations and government that operate on a collective scale. Ardoin also suggests that mission-driven institutions such as botanic gardens, zoos, and environmental groups should assess the impacts of their educational initiatives and their benefit in comparison to direct conservation measures. In relation to the Billionth Seed project, the pupils contributed to the publicity event aimed at raising the profile of the Seed Bank conservation work. Hence, the organisation made a deliberate decision with the educational project to include pupils in an activity which would be used to ensure the continuation of the organisation's conservation work.

Raising pupils' environmental awareness was also amongst the projects aims, but had no explicit behavioural change agenda.

Educators would quite often argue that environmental issues were implied during the school visits, but were not taught directly; the idea behind this was that providing experiences in the gardens and increasing pupils' environmental knowledge would result in pupils' increased environmental awareness. For example Michelle, a Wakehurst educator, when asked whether environmental issues had been addressed during Oak Tree Primary Yr6 pupils' visit to Wakehurst which focused on Habitat and Adaptations, responded:

> **Michelle:** no, not really, other than maybe in a roundabout way. That they had a greater appreciation of biodiversity of life as a consequence of going there. You know that 'wow' factor. Maybe it might make them (pupils) think 'we have all got to start looking after things so they are better'. But I am not sure that, that really would be the case (Interview with Michelle, 25/6/2007).

The point was made that it is important for educators and teachers to have clear learning objectives when pupils are taught in the gardens, and predetermined success criteria. This point was raised after the educators reflected on their practice when asked about the pupils' learning during a specific visit, and if they would improve elements of the visit. As a teacher pointed out, 'if you are going to go down the line of an environmental lesson you've got to be very clear about your objectives'(Interview with Esther, a Cherry Tree Primary teacher, 7/3/2007). Research on outdoor education (e.g. Mannion *et al.,* 2006) has said that if outdoor education programmes want to develop young people's consideration for the environment that should be an explicit focus of the programme and that simply having outdoor activities in nature is not enough. Additionally, Ballantyne & Packer (2002), when investigating the ways in which students approach and respond to nature-based learning experiences, claimed that one of the most powerful ways of communicating an environmental message to young people is to demonstrate the consequences of environmental mismanagement and the impact humans have had on the habitats of other species.

Another point concerning the kind of environmental issues that were addressed during a visit comprised respecting the Wakehurst environment. Many participants i.e. educators, teachers, pupils and volunteers, on a variety of occasions, mentioned that the only environmental issue raised was when the educator stressed to the pupils not to pick parts of the living plants. Although

I believe it is necessary to make that point on every visit, when it is referred as the main environmental issue addressed during a visit, it seems very limited.

The only example of an activity that refers to the social aspect of environmental issues was an activity on fair-trade products implemented during Elm Tree Primary Yr4 pupils' visit that focused on Rainforests. The activity included testing different kinds of chocolate (organic, fair-trade, and supermarkets' usual milk chocolate) during the rainforest products workshop and at the end of the visit. This was a role play on how fair-trade works. When I interviewed the teachers after the visit, they acknowledged the links of the activity with raising environmental issues, and also appreciated the way it was carried out. They also commented that it was a good introduction on fair-trade that they were planning to develop at school. Although it was a really well thought through way to integrate environmental issues during the visit on rainforest, the organisation of the activity, especially the role play in the end did not deliver as much as it could. It was a last minute decision to implement the role play at the end of the visit so the educator did not have time to think through how to clearly communicate the messages and more importantly the role play was carried out in a rush and no time was given for debating or discussing issues of fair-trade. When I went back to school to interview the pupils the pupils were able to identify the differences between the three kinds of chocolate and also to explain what fair-trade means. However, when I asked them whether they were going to think differently when they buy chocolate next time, they did not give any indication of changing attitudes. They did not even think that fair-trade products may be linked with their everyday choices. The fact that no discussion time was given at the end of the role play and the messages were put across in a rather prescriptive way, 'will you persuade your mums and dads together to buy things that are fair-trade cause it's good for you?'(Elm Tree Primary visit transcript, 20/6/2007), were possibly the main reasons for failing to achieve more critical thinking on fair-trade products.

Only a few of the activities I examined during my fieldwork included stimulating pupils' critical thinking, depending on how they were implemented. These included the activity on fair-trade chocolate, the food-miles activity, and the rainforest workshop. Heimlich & Ardoin (2008) distinguished between environmental educators who aim to make conservation actions routine, default actions supported by social norms (in behaviour theory these types of behaviour are called causuistic), and educators who aim to make conservation actions the result of critical thinking where the learner decides to do this. With critical thinking, behaviours need to be post-conscious rather than subconscious which means that when situations or circumstances change the

individual is able to identify a behaviour that can or should change. Behaviour change that is achieved because of critical thinking is based on skills of transfer, knowledge and attitude.

Moreover, activities such as food-miles, fair-trade chocolate, and the rainforest workshop include looking at environmental inequalities; for example, the fair-trade chocolate activity was looking at inequalities between the farmers in developing countries and the socio-economic systems that regulate market prices and distribute products. The rainforest workshop raised inequality in the sense that the rainforests are overexploited by humans, for example when the rainforests are cut down to be replaced by oil-palm plantations. These activities are underpinned by an experience as praxis approach, which is linked to the philosophic tradition of critical theory. Roberts (2008, p.27) explains that the purpose of education from a critical perspective is 'to foster a kind of critical consciousness that attempts to reveal structural and systemic inequality while also providing a sense of urgency to act locally on these injustices'. In terms of the environmental learning experiences during activities focusing on food-miles or fair-trade, the local action was interpreted as individual's actions, e.g. buying fair-trade products and locally sourced food. It should be also noted that the experience as praxis perspective was rarely supported during the environmental learning experiences offered by the Wakehurst – school collaborations.

Figure 8-4, (next page) summarises all the participants' references on the kind of environmental issues that were addressed during Wakehurst's collaboration with local schools. If no environmental issues were identified, I requested the reasons for that from the participants. Figure 8-5 summarises the justifications I was given from educators and teachers, as, together, they were both responsible for the content of the activities.

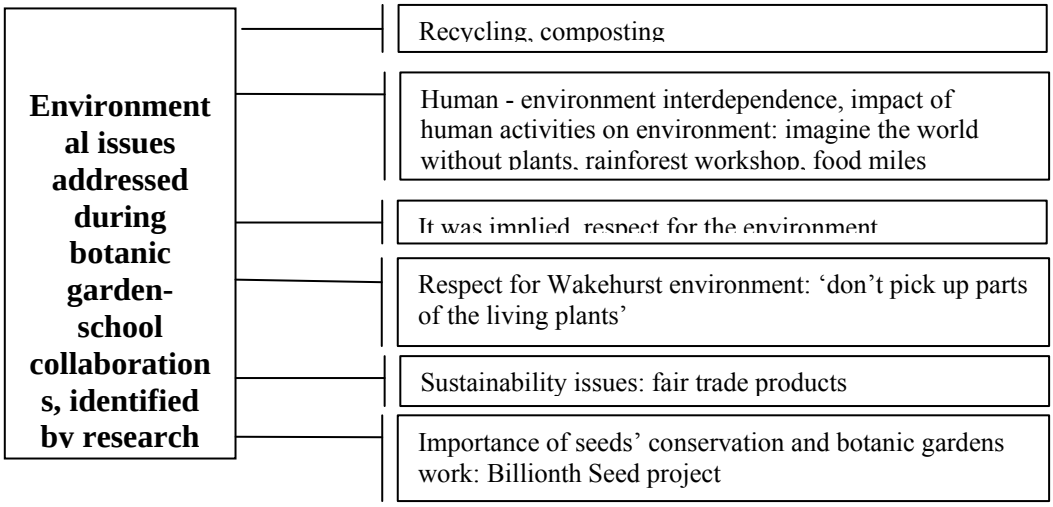

Figure 8-4 Environmental issues addressed in the school – gardens collaborations

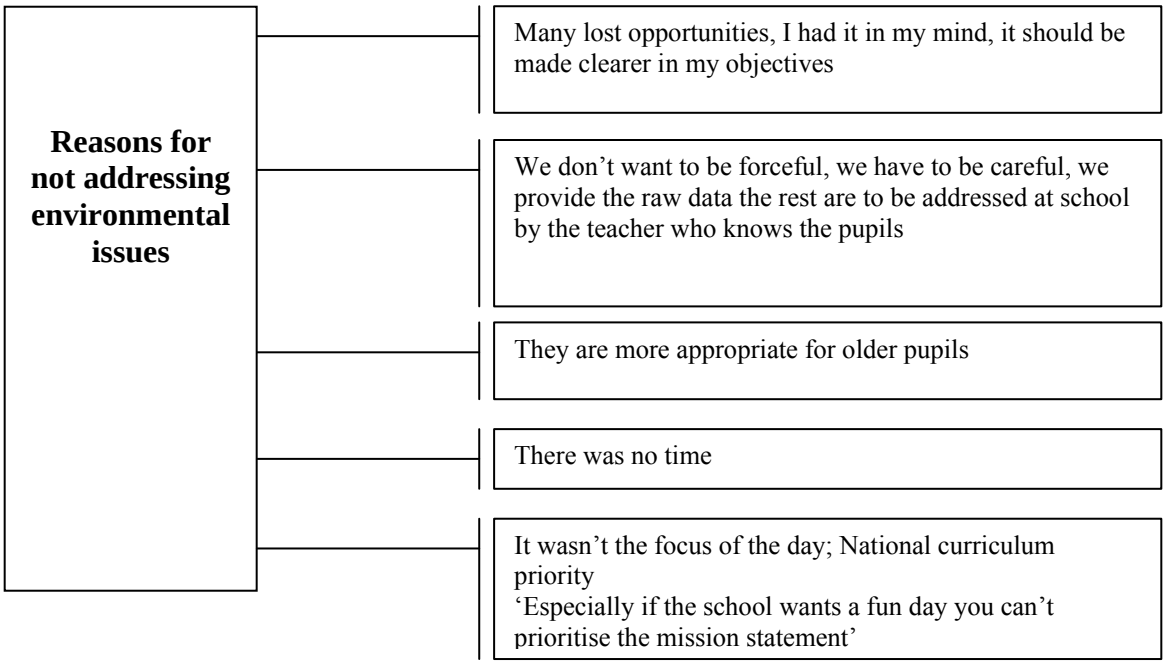

Figure 8-5 Reasons for not addressing environmental issues during the school – gardens collaborations

8.5.2. Reasons for not addressing environmental issues in the gardens

Most of the educators argued that they felt it was important to address environmental issues during a visit, but what they said did not always reflect their practice. For example, Kelly, a Wakehurst educator, explained that during a Cherry Tree Primary class 5 visit to the gardens, based on the theme A place to Grow and Plant Adaptation, she was thinking of referring to examples of plants that are adapted to specific environmental conditions which, as a result to climate change, may face extinction. However, she forgot to mention this during the visit. Clearly it was not an important aspect of her thinking on the activity, and was not an agreed objective of the activity.

It was interesting that the top priority was always satisfying the clients and this issue came up during the planning meetings. Michelle, a Wakehurst educator, argued that 'sometimes you cannot cover everything that's in the mission statement'. She argued that if the school specifically requests a fun day, the educator cannot explicitly address environmental issues, but only do this in an indirect way by having fun with activities based on an environmental theme. The issue that

arises here is that the educator sees her work's purpose as providing and delivering a product, i.e. the school visit to satisfy the customer, i.e. the teacher, and that is how the collaborative relationship works. The teachers are very insistent that the main purpose of all visits has to be related to learning at school and the national curriculum. Esther, a Cherry Tree Primary class 2 teacher, argued that environmental issues may be addressed during a school visit only if the focus of the visit is environmental issues, provided, that is, it is related to the focus of work in school. There are opportunities within the national curriculum to address environmental issues. For example, according to the KS2 geography curriculum requirements, pupils should develop 'knowledge and understanding of environmental change and sustainable development'. Hence, the reason for not addressing environmental issues during visits is because teachers have specific aspects of the national curriculum they would like taught in the gardens. It may be also inferred that, on many occasions, neither teachers nor educators have any interest in teaching about environmental issues. The issue that arises is what happens to the environmental aspects of the national curriculum if teachers and educators are not interested in teaching them to pupils.

Time restriction was a factor emphasised by participants as a reason for not addressing environmental issues. Although the educators argued that it is vital to incorporate environmental issues in their teaching, when questioned about their practices, a representative sample of responses was: 'We didn't push it today 'cause we had so much else on. I don't think saving the planet was appropriate. Well we didn't have enough time for that' (Interview with Margaret, 6/3/2007).

The arguments about time restrictions and that environmental issues will only be addressed if they fit with the national curriculum and what the pupils learn at school, implies an emphasis on a neo-experiential and interactive approach to experience rather than an experience as praxis approach (Roberts, 2008). In particular, it was a priority for teachers and educators to link the environmental learning experiences in the gardens with experiences in school, and also to efficiently control them and use them as a way to fulfil neo-liberal education that requires a skilled, knowledgeable workforce to fulfil the society's needs. More political perspectives, which may undermine the status quo, are rather marginalised or completely ignored as a result.

Time restrictions were discussed in connection with other factors such as the age of the pupils, and what pupils are being taught at school. Heather, a Wakehurst educator, suggested that for primary level pupils, educators should not directly push environmental issues as they could be

seen as becoming prescriptive. The garden's role, she said, is to provide 'the raw data and some understanding of the importance of the plants' and then it is the teachers' responsibility to focus on the issues and have more discussion at school. On many occasions the educators argued that addressing environmental issues is 'something they have to rely on the schools to do'. During a discussion I had with Michelle, a Wakehurst educator, she argued that she expected my research to show that at Wakehurst they do not do much about environmental messages (e.g. how important plants are). She explained the hectic visit time schedule, and that during planning meetings, or during the visit, she tries to encourage the teachers to expand more on environmental issues at school following up the experiences in the gardens. However, the educators' justifications for not addressing environmental issues show that this was not their priority.

During my research I did find that a few teachers were enthusiastic about environmental issues and would find a way to incorporate them in their teaching, often related to science or as part of a cross curriculum topic. More often though, I found that teachers stated that environmental issues are important to address but when I asked them for specific examples from their teaching in class, they would divert the responsibility to the whole school ethos and extracurricular activities such as the Eco-school committee or the gardening club. As a consequence, addressing environmental issues in schools depends on the teachers' enthusiasm and personal drive, hence, relying on schools to address environmental issues which is part of the gardens' mission is not a strategy with guaranteed results no matter how strong the link between school and the gardens. The issue emerging is that teaching about environmental issues becomes a devolved responsibility. The educators say that it is the teachers' job to raise environmental issues in the class, and the teachers say that it is an out of class responsibility related to the whole school ethos.

Another important point raised regards the educators' backgrounds. When I was discussing with Michelle whether the mission of the gardens is taken into consideration when the educators plan the activities for the pupils, Michelle argued that a reason for not always doing that is the educators' professional training as teachers, and their usually long experience in schools, means that they are lacking a natural sciences background. The clear point that emerges from the data is that, while educators say that it is important to address environmental issues, in practice it was not usually their priority, and was often ignored. Oikawa (2000, p.425), in her research in botanic gardens in Japan and other countries worldwide, also pointed out that 'there is a strong tendency for educators to be trained as school teachers with some interest, but no advanced qualification in

natural sciences. That makes them effective at responding to the demands of school groups, but can marginalise education both structurally and philosophically within the organisation'.

In Figure 8-5, I summarised the reasons given by the educators and teachers for not addressing environmental issues during gardens – school collaborations. However, the analysis showed more reasons hidden behind these statements such as a client – provider relationship established between educators and teachers, the educators' background in teaching in schools, the lack of professional development in gardens' education on how to address environmental issues, and also teachers' and educators' lack of interest in addressing environmental issues that are included in the national curriculum. These findings point out the need for more professional development and initial training for both teachers and educators on how (including both content and pedagogy) and why it is important to address environmental issues in schools and in outdoor education settings such as botanic gardens.

8.5.3. Examining environmental learning experiences and implications for addressing environmental issues

An interesting finding accruing from the data has been in relation to environmental learning both as a process and outcome. During the visits, and also during the Wild View project in schools, the educators often related new things they were going to teach to pupils' previous knowledge and, during the activities the pupils often, without prompting, recalled knowledge experiences from home, school or other sources that were related to what they were doing and learning in the gardens. That finding corresponds with Sanders's (2005) research which pointed out that pupils transferred knowledge they learned from home and other sources to the gardens and often that their previous experiences guided their interests in the gardens. For example, Harry Potter books and Pokemon cards influenced pupils' focus on specific plants when visiting Chelsea Physic Gardens. More importantly, when I was asking pupils what they had learned during a visit, they occasionally referred to learning they gained from other places on the topic they were studying in the gardens. Since I was present during their experiences in the gardens and the Wild View project at school, I was able to identify pupils' responses that did not always correspond to things they learned during specific activities. The ethnographic methods I applied during my research were particularly useful to obtain those kinds of data. With further questioning, pupils would

often clarify the exact source of knowledge they were referring to. In addition, teachers would often say that reinforcing pupils' knowledge from different sources, e.g. school and gardens, is very important for their learning. For example, during the Cherry Tree Primary class 2 spring visit to Wakehurst based on the general theme of plants, pupils did a range of activities including planting sunflower seed in the potting shed, learning about the growing stages of a sunflower plant, and being introduced to the parts of plants and their function, before going on a trail to investigate parts of the plants in the gardens. When I interviewed pupils about what they learned during the visit, at one point focusing on what they learned about the functions of the parts of a plant, one child responded:

> **Researcher:** what about the flower? What does it do for the plant?
>
> **Erica:** it's the part of the plant where the bees come to collect the nectar and when they come and collect the nectar the pollen goes on them and when they go to the next plant the pollen goes into the next plant and it's called pollinating.
>
> **Researcher:** did you learn that at Wakehurst or did you learn that at school?
>
> **Erica:** I knew it, I knew something was called pollinating because I was watching 'a year at Kew' (tv programme) which had something about pollinating but then I learned even more about it at Wakehurst Place (Interview with class 2, 21/3/2007).

Erica's account of her environmental learning experience could be analysed using Barron's (2006) learning ecology framework which has been presented earlier in this chapter. Erica reported that she learned about the function of the flowers on television and then she extended that learning at Wakehurst. Erica's experience fits with the Barron's first conjecture, according to which within any life space, a variety of resources such as people, conversations and books, can spark and sustain interest in learning. Erica chose to watch the specific television programme which focused on the environment, and the program stimulated her interest in flowers. Although she did not choose to visit Wakehurst, as that was a decision pre-determined by her school, her initial interest became the basis for her to become immersed in the environmental learning experience at Wakehurst. As Burbules (2004) explains the experience was interesting and involving as it allowed Erica to follow her already developed interest in flowers and also to learn about something that she already believed concerned her. Erica's learning choice fits with the second conjecture of the learning ecology framework, according to which people not only choose, but also develop and create learning opportunities for themselves once they are interested, provided they have time, freedom and resources to learn. Erica's interest in the topic of the flowers was instigated at home when watching television, and then was carried through to a different context, i.e. the botanic gardens. Erica's learning across contexts fits with the third

conjecture of the model according to which interest-driven learning activities are boundary-crossing and self-sustaining.

Factors that have been highlighted by Falk & Dierking's (2000) Contextual Model of Learning which focuses on free-choice learning in museums are also evident in this example. In particular, within the personal context of the model, interest, motivation and previous experience are all contributing to an individual's further learning. Erica was already interested in the flower structure and functions, she was self motivated to learn more on the specific topic, and she was able to extend her learning based on her previous experience of watching the television programme. What is important here is that educators and teachers can collaborate closely to offer learning experiences to pupils in the gardens that are linked with their experiences at school, but the pupils are active learners, who also decide for themselves what is relevant, based on experiences they have in and out of the school in a variety of contexts. By creating these links they extend their learning. In that sense it is of equal importance, when designing structured activities during school visits to consider not only learning objectives based on the school curriculum, but also pupils' emergent learning objectives based on their wider life experiences and what motivates them to learn.

These observations and data on how learning occurs in the gardens correspond to a constructivist view of learning (e.g. Piaget, Bruner) where learners have an active role in constructing new knowledge built upon and combined with previous knowledge through processes such as assimilation and accommodation (see Piaget & Inhelder, 1969). 'The growth of the intellect, rather than something that happens to the child from the outside, is a process of self-construction, governed by existing formations of cognitive structures' (Gruber & Voneche, 1977, pp.xxviii). Moreover, my observations and data correspond to sociocultural approaches to learning which argue that individual cognition develops as a result of interactions in the social life of the individual (Vygotsky, 1978). All learning is built upon previous learning, not just of the individual but of the entire society in which the individual lives. According to Vygotsky 'the child is part of the social situation, and the relation of the child to the environment and the environment to the child occurs through the experience and the activity of the child himself' (Vygotsky, 1998, p.294). Hatano (1993, p.157) suggested an extended Vygotskian conception of knowledge acquisition according to which:

> availability of multiple sources of information enhances knowledge construction. As understanding is to find coherence among pieces of information, and the construction of

> conceptual knowledge is often based on understanding, availability of multiple sources of information is expected to enhance the construction. It is especially beneficial for learners to have external sources of information other than the teachers because too much reliance on the authorized answer given by the teacher reduces students' motivation to understand and construct knowledge of their own. Among others, confirmation or disconfirmation of predictions by direct observation or consulting a reference book serves to enhance learning.

The above theories reinforce my observations of how the pupils in my research actively merged information and experiences they had from various sources, places such as school, gardens, the internet and television, to form their own emerging worldview. Roschelle (1995) explains the phenomenon of pupils merging knowledge from different sources into one, arguing that learning requires building upon prior knowledge with additional information and experiences. Numerous comparable experiences are combined into a single composite recollection, creating personal constructs rather than exact reproduction. Memory enables us to respond to new events, particularly emergencies, with the wisdom of prior experience, by influencing what a person will perceive and attend to in the future. Thus, prior knowledge can be understood as the raw material that fuels learning.

Falk & Dierking (2000, p.147) stress the continuous nature of learning. They looked at Benjamin, a seven year old child visiting the Smithsonian's Natural History Museum with his family, using their Contextual Model of Learning (see 3.7.5.) and commented:

> for Benjamin, the museum experience was part of a larger continuum of experience – conversations with family, visits to other museums, television specials, books read, and classroom experiences. What Benjamin learned in one place was part of what he learned in some other place; all were intertwined – so intertwined that they challenge our abilities to reliably extract from his memories what was attributable to the museum experience and what was more appropriately attributable to some other related experience.

Falk & Dierking's (2000) argument coheres with my finding on the merging and intertwining of learning from different sources and the difficulty of attributing the sources of the new knowledge. Teachers' and educators' efforts to link environmental learning experiences across contexts and pupils intuitively combining their learning experiences, implies an interactive, Deweyan perspective of the experience (Roberts, 2008). Teachers and educators, when they collaborate, try

to link environmental learning experiences in the gardens with experiences at school so that they will achieve a continuity to the experience where 'the past and present interact to create the future and the meaning of such interaction is directly correlative to the connection we make in the process' (ibid., p.22). The pupils themselves do identify the links that the educators and teachers encourage them to make, but they also make their own links with other personal experiences in and out of the school. Rickinson *et al.*'s (2009) lens on issues of relevance is also meaningful here. Rickinson *et al.* (2009, pp.64-65) suggest that 'learners are more motivated and engaged, and perceive greater value in learning that they see has some relation to themselves as individuals and their personal experiences'. I have demonstrated, in my research, that pupils become immersed in learning in the gardens when they can link it with their learning experiences elsewhere, not only when the learning is related to the school curriculum, but also when they identify learning linked with their family life or activities in other settings.

Moreover, I have identified that kind of merging and reinforcing of environmental learning experiences across contexts not only in cases where environmental issues were addressed, but also in respect to changes in attitudes and behaviours. When asking research participants whether they would change any of their behaviours related to the environment because of their visits to Wakehurst, teachers would often suggest that what pupils learned in the gardens in relation to environmental issues, they also learned, and practised, at school or at home, and so changes to pro-environmental behaviours cannot specifically be attributed to learning in the gardens. During a Cherry Tree Primary class 4 visit to Wakehurst in autumn 2006, which was based on WWII, the pupils had a workshop on food miles and an introduction to recycling-reusing including a trail in the gardens. All the activities included references to WWII, but also included a discussion on how similar practices are important, and still apply, nowadays. After the visit I discussed, with the teacher, the effect of the visit's activities on pupils:

> **Researcher:** What are some of the things the pupils learned about caring for the environment during the visit?
>
> **Joyce:** well they might have learnt about food miles and trying to buy local produce, and again they may not have done; they certainly would have learned about it as an idea, but made them go to Tesco's and say to their parents oh no do not buy that, it came from Kenya, and we should support English produce, whether they will actually do that, it is another matter. But as I just said the idea is there, and that it is there, is worthwhile. The recycling, they've seen the recycling over and over again; they don't really learn about this at Wakehurst; I think it is reinforcing it by going to Wakehurst

> **Researcher:** do you think the collaboration with Wakehurst has made pupils change any environmental attitudes or behaviours?
> **Joyce:** I don't know. Because again we, as a school, try really hard to be environmental, so I think it reinforces; I think that's the important thing; not changing their spirit, but reinforcing it. Because it is rare to go somewhere and be transformed straight away by something. I think you don't have to go somewhere and your ideas will completely blown over, but if you hear it from more than one place you begin to see it as normal and natural and right. So, I don't think that they changed, I think their ideas are reinforced (Interview with Joyce, 3/11/2006).

Class 4 pupils' responses confirmed the teacher's comments. The pupils were able to identify that the environmental issues that were addressed during the visit were about food miles, about environmental damage and, also, about recycling-reusing materials. When I asked the pupils whether the visit has changed their concern about the environment they started talking, amongst other things, about pollution issues and ozone layer depletion although these were not touched on during the visit, but were linked with topics already taught. In addition, when I asked the pupils whether they were going to change any of their everyday behaviours because of the visit, some responded that they were going to recycle more while others mentioned that they already have environmentally friendly behaviour at home. Joyce, a Cherry Tree Primary teacher, stressed the importance of reinforcing knowledge, which is a point often ignored by teachers.

I should also admit that when starting my research, I looked to uncover new knowledge, attitudes and behaviours as a result of pupils' experiences in the gardens. Ardoin (2009) looking at free-choice learning settings such as aquariums, zoos and botanic gardens, argued that it is difficult to discern whether people's future actions are attributable, or influenced, by participation in a free-choice learning experience. Such free choice learning events are not isolated but 'occur within the rich tapestry of a visitor's life. This complicates the assessment of impacts as vastly different backgrounds and expectations can lead to a variety of learning and behavioural outcomes' (ibid, p.60). Although, as I have explained elsewhere, environmental learning experiences in the gardens which I examined are not free-choice learning as they are structured, with predetermined learning objectives, they are still very limited in time and they are 'one-off' experiences that play only a small part in comprising pupils' life experiences. Therefore, in part, Ardoin's argument is also applicable to the learning experiences in the gardens and shows that it is quite unrealistic to attribute pupils' future actions including behavioural change solely because of their environmental learning experiences in the gardens.

The environmental learning experiences I observed in my fieldwork came to redirect my initial assumptions to pay more attention to learning as a process of reaffirmation and assimilation, as Piaget describes (Piaget & Inhelder, 1969). Falk & Dierking (2000) argue that, most of the time for people, learning is a process of assimilation and more rarely it involves accommodation (learning that fundamentally modifies prior knowledge). However, historical models of learning have been predicated on the assumption that real learning is the measurable change in understanding that comes about through accommodation. In addition, most of the research methods for assessing learning in museums and schools have been exclusively measuring fairly major, fundamental changes in knowledge structures, rather than the more subtle reinforcement of pre-existing known things, and as a result much, if not most of learning, has remained undocumented. Learning often requires a reconstruction of prior knowledge, the mental accommodation of new ways of seeing, feeling, and thinking about knowledge, and learning also occurs when accompanied by supportive contexts from which it can emerge when, for example, a fact or idea long forgotten suddenly pops to mind (Falk & Dierking, 2000).

Here lies another important point to be made in relation to methodological implications for researching the learning process; the qualitative and ethnographic methodology I used in my research allowed me to gain an insight into how pupils' environmental behaviours are shaped and influenced. Moreover, pupils' responses to questions such as, 'Have you changed the way you feel or care about the environment because of a specific intervention e.g. school visit to a nature-based setting' may be misleading. It seems prudent, therefore, when using quantitative studies which, through questionnaires (pre- and post-), young people are prompted to report specific attitudinal or behavioural changes in respect to the environment attributed to specific environmental education programmes (for example, Ballantyne & Packer, 2002), to treat the results with caution. The young people may report new knowledge but also attitudes and behaviours that were influenced by other factors e.g. learning at school, at home, or from other out of school, and out of home experiences on the same topic.

Going back to the gardens' mission and the education role within that, an overview of Kew Gardens' work and the 'Planet Programme' (Kew, 2008, p.13) described that, amongst the seven key actions, is 'Using botanic gardens to inform and inspire'. The overview also suggested that 'Education is a major priority for Kew because a well-informed public will care for the global environment'. The first point to be made is that if botanic gardens aim to encourage

environmentally friendly practices as part of their plant conservation strategies, they should consider that the linear 'information deficit' model, which supposes that an increase of knowledge leads to attitudinal change which results in adopting environmentally friendly behaviours, has been shown to be invalid. The work summarized by Kollmuss & Ageyman (2002) shows that there are many barriers preventing a simple linear progression from knowledge about the environment to action and if an environmental educator seeks to make a real impact, they should avoid falling into the trap of assuming this linear progression occurs. Scott & Gough (2003) warn that although the information deficit model is proven limited, some of those involved in the design and delivery of environmental education continue to persist with it. Phillips (2008) expanded the criticism of the information deficit model by illustrating a variety of influences on individuals' behaviours (figure 8-6). However, in my research I have a few examples of what seem to be direct connections between experiences in the gardens resulting in caring for the environment in practice. In the following excerpt, Cherry Tree Primary class 4 pupils described a long lasting memory of a learning incident from their visits to Wakehurst in the past:

> **Peony:** In Wakehurst that's a sort of thing you can't really forget so, something really surprising happened when we were there. The lady got to the subject of the sort of leaves where hedgehogs and minibeasts, and frogs and things, like to hide and hibernate for the winter, and she said if there is a heap of like a low pile, which something could hide in something which they are not using, also a leaf pile in the winter and autumn you are not using and you could leave it there, and don't touch it in winter, maybe some animals, minibeasts may come in. So now, I am making some leaf piles in some land that we have; we are making these piles for hedgehogs cause we found some in the land (Interview with Cherry Tree Primary class 4 pupils, 4/10/2006).

That kind of recall from pupils' 'significant life experiences' occurring in the gardens, seem to arouse an emotional influence in them and encourage environmental behaviours. Emotional involvement is just one of the internal factors pointed out by Kollmuss & Agyeman (2002) that may influence pro-environmental behaviour. Rickinson *et al*. (2009) also argued for a focus on emotions and values in order to understand environmental learning as emotions can be a 'driving force underpinning engagement in learning' (ibid, p.48). Here, the emotions not only indicated pupil's immersion in the experience but also were a stimulus for future action. Moreover, Heimlich & Ardoin (2008) suggest that action can be instigated when emotions, cognition and values are combined with the appropriate skills and opportunities for taking action. In this example, Peony's emotions and values for the hedgehogs and minibeasts' protection was instigated at Wakehurst where she also learned how she can practically help them during the

hibernation period. Following this, given the opportunity, she used her new skills in creating leaf piles on the land that her family owned.

Other activities conducted at Wakehurst, however, proved my expectations wrong. The activities focusing on food miles or fair-trade chocolate, for example, which I expected would make pupils think about their consumerism habits, proved otherwise. It was not the content of the activities that led to the outcomes falling short, but the way the activities were implemented. When I interviewed the pupils after the visits and asked them whether they would change any of their habits or behaviours, or would think of adopting any different practices, they showed no indication of thinking that way. The educators in both cases suggested that the objectives were not clearly communicated, and I must add that no time for discussion and debate was given to the pupils despite the many challenging issues that activities may bring. However, in both cases the pupils were able to tell me that they had learned what fair-trade chocolate is, and the benefits that fair-trade products may have for the local farmers. In the food miles example, the pupils were also able to explain how the food that travels from distant countries, has an impact on the environment.

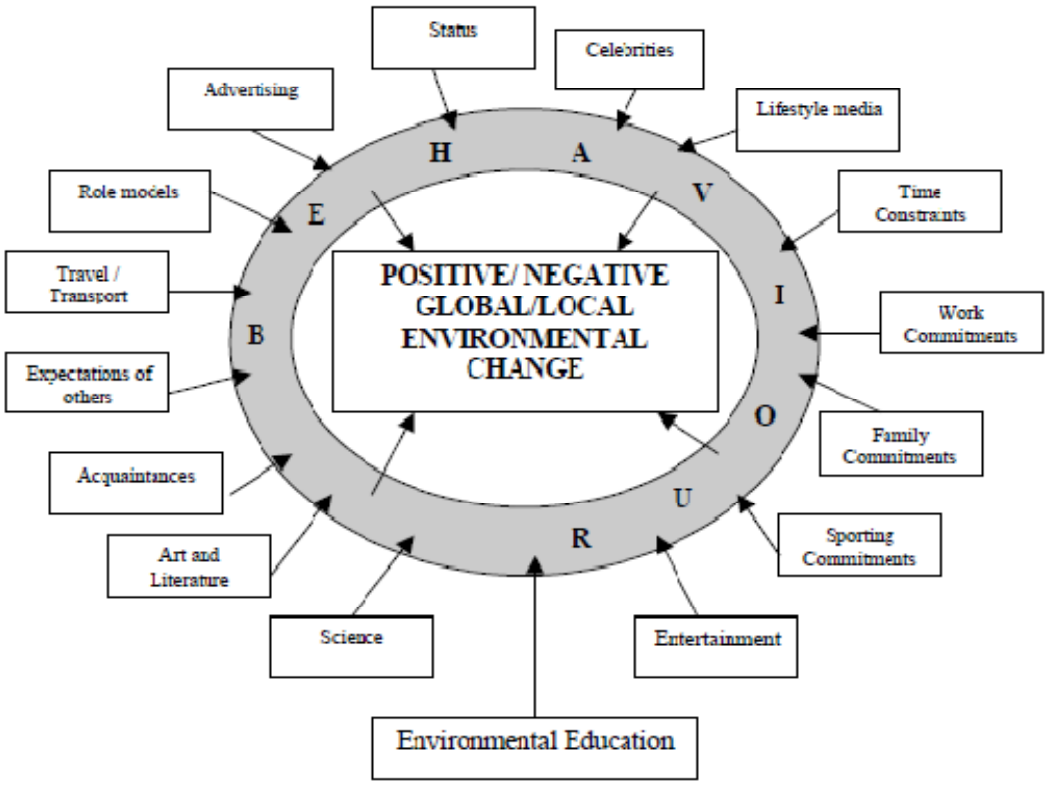

Figure 8-6 Influences on the behaviour of a social actor (Phillips, 2008)

8.5.4. Exploring effective and alternative ways to address environmental issues during botanic gardens – school collaborations

I shall now examine possibilities of increasing the influence of environmental education by combining environmental learning experiences across contexts. This study has shown that pupils do not easily discern the sources of knowledge which contribute to their learning. Moreover, the teachers and educators in this research remarked on the importance of reinforcing knowledge from different experiences. Clearly, the collaboration of botanic gardens with local schools is an example of how this reinforcing may be achieved, for example, the influences on individuals towards adopting environmental friendly behaviours. In this section, I recall educators' suggestions for environmental issues to be addressed at school because of the time restrictions during the school visits to the gardens, and also teachers' arguments that environmental issues should be addressed during the school visit only if it is the focus of the day, which is determined usually by the national curriculum.

In the following example I illustrate how pupils' environmental learning experiences in the gardens can be linked with experiences in other informal education settings, and at school, and can result in a more holistic way of addressing environmental issues. During the summer term, Cherry Tree Primary class 4 was studying the topics of Rainforests, and India, at school. As Joyce, the teacher, had a cross curriculum approach to her teaching including the visits to Wakehurst, she organised with Michelle, a Wakehurst educator, activities on the topic of Rainforests and Tree mythologies to be covered during the visit (details on the visit have been described in section 7.2.). When I interviewed Joyce after the visit, she described the variety of activities she had organised at school in relation to environmental issues. Since it was the enrichment week at school, and pupils from different classes were mixed together for a variety of activities, Joyce was responsible for creating a play with the pupils on the topic of littering. In addition, Joyce took her class to a local college for a science fair event focused on climate change, which was linked to the Rainforest topic. At the end of all the different environmental learning experiences for class 4, including the visit to Wakehurst, Joyce developed a writing task that would reinforce the links (see an example of the worksheet in Appendix 9). The exercise concluded:

> **Question3:** From our Rainforest trip to Wakehurst and climate change trip to Oathall Science Fair, plus your work on Chembakolli village in class & the link above, you know

> the rainforests are important. Choose 1 thing you will do to help save them. Make your promise here'.
>
> Here is a selection of the pupils' answers:
>
> 'Don't let the rainforest be cut down', 'Try not to cause pollution and make it hot cause all plants/food will die' 'I promise to buy all the fair-trade things I can', 'have a bake sale or school fundraise to raise money to donate to an organisation that works to conserve rainforests.

I should comment that in the above example environmental issues were addressed in a subliminal way during the school visit to Wakehurst. The visit was used as the 'raw data' which, in combination with the other experiences the pupils had, in and out of the school, resulted in pupils expressing their environmental attitudes in the written task at the end. Another point to be made is that this specific example illustrates the potential of combining indoor and outdoor education in addressing environmental issues, and that focusing on environmental issues should not necessarily be left to the teacher's responsibility entirely. Jones (2003), in her investigation of young people's understanding of the environment during their visits to the Birmingham Botanical Gardens, explained how pupils' previous knowledge from television, books and home, guided their interest in the gardens, and their desire to learn new things. The research highlighted the importance of both formal and informal educational contexts in the construction of young people's environmental understandings. Extending Jones' (2003) findings, Cherry Tree Primary class 4's study of Rainforests is an example of how teachers and educators can combine their skills and expertise by providing linked experiences in the school and in the gardens on a topic related to environmental issues, resulting in a reinforcement of pupils' learning.

Botanic gardens education practice has much to gain by including constructivist and sociocultural theories in the way environmental issues are addressed in the gardens. DiEnno & Hilton (2005) theorise that, according to constructivist learning theory, students come to class with their own assumptions about how the world works, and construct knowledge based on their personal experiences rather than passively absorbing it. Hence for new knowledge to be retained, it needs to be presented in a way that fits into pupils' existing worldview. In addition, a Vygotskian perspective of learning emphasises the influence of a variety of sources of knowledge and experiences on young people, according to the wider social and cultural contexts in which they live. Educators in the gardens, in collaboration with teachers who have a better knowledge of the pupils' experiences in school and in other contexts e.g. family, can use this knowledge to build

upon activities on environmental issues and reinforce pupils' views and concerns about the environment.

Ardoin (2009) highlighted the short-term duration and episodic nature of free-choice learning in conservation educational settings. This argument does not fit with the behavioural models which require learners to follow a particular path, practice certain skills and engage in directed actions. Therefore, to follow Ardoin's thinking, if an individual participates in a conservation-related education program then that action does not necessarily guarantee a change in an individual's behaviour in the future. 'Education prepares participants to make adaptive decisions over the course of a lifetime. While a learning event may mark a watershed moment in an individual's life, it more likely represents one in a series of cumulative events that may affect knowledge, attitude and skills, which have the potential to eventually link with changes in behaviour' (ibid, p.70). As I have already explained, the activities in the gardens are not free-choice, however, they are short-term and may be episodic as well, according to how they are designed and whether or not they are connected with environmental learning experiences at school and elsewhere. The challenge for educators and teachers is to connect all these experiences so that they become cumulative events which may help pupils learn. The class 4 learning experiences, which were related to environmental issues in a variety of contexts, is a successful example of how the teacher, in the end, connected all the experiences and the students responded accordingly. The issue that arises is that the initiative of connecting these environmental learning experiences should not be left entirely to the teacher's willingness and enthusiasm as the educators representing the botanic gardens mission can also play a more active role in that. It becomes also evident that the botanic gardens – school collaborations which combine the main factors pointed out by my research, i.e. interdependency, history of collaboration and individual relationships, have the potentials to help pupils achieve reinforced environmental learning experiences which focus on environmental issues, across settings.

Educators have often expressed their concerns about their teaching becoming indoctrination. Given that posibility it is worth exploring the kind of messages that are addressed in the gardens, and alternative ways they can be communicated. As I have already explained in my analysis, the research participants identified recycling/composting as the most obvious environmental issue addressed during the visits. Approaches in environmental education that focus only on private actions (see Stern, 2000 on 'private sphere' and 'public sphere' actions), such as turning off lights, recycling, composting and green purchasing, form the goal of many environmental

initiatives, and have been criticized because their effect is limited, as solutions to environmental problems are multifaceted. This situation is particularly apparent when analysing global environmental problems, as the effect of private action on these problems is limited unless it is combined with some form of organisation for collective public change. Hence, if environmental educators confine themselves to fostering private sphere environmentalism, 'they may be leading students astray' according to Chawla & Cushing (2007) (see also Gayford, 2009). Phillips (2008) adds that environmental education that encourages actions such as recycling/composting fail to educate people to think of the causes of the environmental problems e.g. consumerist lifestyles. In that case, increasing recycling and composting may create an individual's feeling of satisfaction for doing something practical for the environment, but unless that action is combined with reducing consumption rates, and the amount of waste accruing, no real change is achieved in respect to waste problems. Phillips (2008) suggested that it is important to educate people about the environment and encourage changes they can make in their everyday lives to minimise their impact on the environment and develop a connection with it, but micro approaches should also allow room for macro – progressive approaches. Macro approaches in environmental education bring a culture shift so that the changes in our everyday lives will not be seen as sacrifices, but instead complement new lifestyle choices and values, resulting specifically from a re-evaluation of the values attached to material goods and services. Macro environmental education questions the drivers of a consumer led economy, aiming to achieve a long term shift to a new sustainable culture. See Phillips, 2008 on the distinction between macro and micro approaches in environmental education.

Adopting a similar logic, Vare & Scott (2007, pp.193-194) term ESD1 for those approaches that promote changes in what we do through informed, skilled behaviours and ways of thinking towards clearly defined needs, and ESD2 for those approaches that build individuals' capacity to think critically about, and beyond, what experts say, and to test sustainable development ideas, exploring the contradictions inherent in sustainable living. Stables (2010, p.596) proposes a curriculum within the formal education sector that emphasises both 'construals of the human-nature relationship and the development of debating and discursive skills informed by critical thinking'. Amartya Sen, Nobel-prize-winning economist, during a presentation of his new book on human justice (Bristol, 2009) argued that a stepping stone for tackling climate change is to bring the issue into public reasoning. An ESD2 approach as identified by Vare & Scott, and an appropriate curriculum within formal education, as proposed by Stables, all emphasise the need to develop critical thinking skills and the art of debating and discussing which are the requisite skills

for a citizen to participate in public reasoning processes for tackling climate change and other social issues as Sen suggests.

Given the arguments outlined above on the importance of developing critical thinking skills through environmental/sustainability education, botanic garden education clearly has a role to play. Accepting time restrictions, and that only so much can be achieved during a school visit, the collaboration of the gardens with schools may still have much to offer. For example, during planning meetings, educators could discuss the option of addressing environmental issues during visits, and also how the gardens' environmental learning experiences could be used back in school to stimulate debate and discussion. Botanic gardens' work, stories about the conservation of plants related to Millennium Seed Bank activities, habitat loss, extinction of plants, and many other subjects, can be explored and be the focus of many interesting discussions allowing pupils to express their ideas and listen to others as well. As a prelude to discussions about these points, I cite (below) part of a discussion between Wakehurst educators on considering alternative ways to address environmental issues in the gardens:

> **Kelly:** When I watched your food miles workshop, Heather, that had a big impact on me, and it made me rethink about things at supermarkets; that's a good environmental one.
>
> **Michelle:** I am a bit concerned about the politics. I think we have to be very careful what we say cause I think the food miles one is highly complex, isn't it? You know, if you go and say right everybody has got to buy local and seasonal and that's the end of story, ehm you know all those Kenyan farmers who are relying on us to buy their beans, you know there's lot of different issues there, aren't they?
>
> **Jean T.:** But that's why I think actually you should be political. Because the one thing you can't do, is say 'you should buy local'.
>
> **Zoe:** That's the political message 'that you should buy local', that's the problem.
>
> **Jean T.:** We should be political by saying 'ok, what are the questions that you should be asking?'
>
> **Michelle:** Yes but we shouldn't be telling them.
>
> **Jean T.:** No we shouldn't, but what we should be doing is telling them to ask questions. We ask questions.
>
> **Michelle:** oh yeah
>
> **Jean T.:** I don't know about you, I mean there are occasions when I go and buy fair-trade organic, and other times quite deliberately because I am running out of time or that's on special offer, buy one get one free and I think what does that mean? I may keep my ideals on one occasion, and totally put away my ideals on another. That is reality. But let's face that reality, and that's your choice.

> **Michelle:** Yeah I agree with you, I think we have to make sure that people understand that there are choices but I don't think that we should tell them what to do.
> **Jean T.:** But it's our job to tell them 'think' (Discussion with Wakehurst educators, 24/09/2007).

Jean's reflection on her consumer behaviour in relation to fair-trade products brings forward the challenge of understanding human behaviour and motivation which are very complex and influenced by multiple internal and external factors, as Heimlich & Ardoin (2008) argue. 'Understanding how and why behaviours occur is perhaps the greatest barrier to affecting behavioural outcomes in educational programs' (ibid, 230). Within environmental education in formal and informal education settings a variety of perspectives exist in relation to the purpose of education. At one end of a wide spectrum of perspectives is the argument that the purpose of education is to affect individuals' behaviours, and conservation education should aim, amongst other areas, to behavioural change. At the other end, the role of education is considered as facilitating an 'individuals' intellectual capability and not imposing on individuals how they should live' (ibid, p.215). The above dialogue shows that educators at Wakehurst regard education in the gardens as contributing to an individual's personal development and acquisition of critical thinking skills which the individual will then use to make their own decisions in relation to environmental issues and their role in addressing them. The educators make a very important point, they see their role as teaching pupils to ask questions and to think. There are usually no straightforward answers to environmental problems and this was evident in the way the educators thought about their own behaviour and their role in influencing young people.

However, in analysing the educators' conceptualisation of critical thinking in relation to environmental issues, it is not explicit whether they would encourage individuals to understand their capacity to change the situation, and to make deeper political connections to existing environmental issues, rather than seeing environmental problems as purely the inadequacy of individuals or a 'behaviour problem' as Clover (2002) would suggest. Last, while it is important that the organisation and its staff have a clear idea of the role of education, equal effort should be put into thinking about the best way to implement an environmental perspective in practice, given the variety of barriers that may restrict what an educational activity in the gardens can achieve.

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Chapter 8 started with an exploration of the ways Wakehurst and the local Primary schools depend on each other. The schools depend on the gardens to provide programmes that fulfil the

national curriculum in an outdoor environment. These include real life and fun experiences, which also provide resources, i.e. financial, facilities and staff who have the expertise to deliver science based workshops. The gardens depend on schools which bring the audience (pupils) for environmental conservation education fulfilling the gardens' mission statement, these also result in more visitors to the gardens, they contribute financially, and help develop the gardens' learning programme by creating new, or improving existing, activities. When such interdependency weakens, for example, when teachers or pupils feel that the environmental learning experiences in the gardens are not as special as they anticipated and resemble experiences in school, dissatisfaction arises and the collaboration is not as successful. It is clear that different perspectives on the value of the experiences may jeopardise the success of the collaboration. Moreover, I have pointed out the importance of accommodating free-choice learning elements and taking more account of pupils' interests and previous experience, during the visits to the gardens.

The three main factors identified by my research: interdependency, history of collaboration and developing relationships between teachers and educators, all contribute to creating links between the environmental learning experiences in the gardens and what the pupils study at school, thus enabling a continuum of experience for the pupils. This chapter discussed an interactive approach to experience which was expressed by pupils, teachers and educators on a variety of occasions, and supports the importance of creating links of pupils' experiences across contexts. Other perspectives on the experience also emerged, such as the neo-experiential perspective which emphasised the value of an experience in the gardens as long as it fulfils the national curriculum, and the embodied experience perspective which emphasised the value of the pupils having special, transcendent experiences in the gardens, and exploring the environment through their senses. Conversely, the more political perspective of experience as praxis was rarely reported. Factors that influenced environmental learning experiences were highlighted, and included discussions on how the organisations and their members collaborate, the links with pupils' previous experiences, expectations, and interest, the sociocultural mediation including peers, educators and teachers, and the gardens as a physical context.

I have also explored what kind of environmental learning experiences the pupils have in the gardens, with the majority of these targeting pupils' understanding of the environment, and combining knowledge transmission and skills development. Only a few activities incorporated environmental issues. Barriers reported by teachers and educators to addressing environmental

issues in the gardens included restricted time, and the focus on the national curriculum. The latter indicates a neo-experiential approach that dominates the way experiences are shaped. However, other barriers were discussed such as teachers' and educators' restrictive interpretations of the curriculum, which overlooked environmental issues, the client – provider relationship established between the teachers and the educators, and an ethos in the learning programme that emphasises teaching plant science rather than raising debates on environmental issues.

Given that learning experiences are short-term and episodic in the gardens, in order to achieve an impact on learners in relation to environmental issues, experiences need to be combined with more consistent learning experiences at school. This argument is based on the finding that pupils as active learners create links between various experiences across contexts and that they merge these experiences into a whole unit, a process that reinforces their learning. Botanic gardens – school collaborations have the potential to achieve these links, as one of the examples highlighted (section 8.5.4, p.351). Whether botanic gardens, based on their mission, choose to focus their education on behavioural change or on facilitating an individual's critical thinking ability needs to be more explicit when the gardens collaborate with schools so that the choice of appropriate strategies and pedagogies will be more effective and communicated accordingly.

In the next and final part of the thesis, the discussion, reflections and implications chapter, I give an overview of the main findings and arguments of my thesis, linking those with my research questions. I also present the implications accruing from my study, not only for future research, but also for policy and practice.

Chapter 9. Discussion, reflections and implications

⌘ Chapter Introduction

How can we build successful collaborations between botanic gardens and schools, as a way to encourage outdoor and environmental education? And how are pupils' environmental learning experiences shaped through these collaborations? This study has approached these questions through an examination of case studies of collaborations between Wakehurst Place, Kew gardens, and three local schools. In the final part of the thesis, I elucidate my research contribution. In doing so, I summarise the main arguments which address my research questions, and discuss the significance of looking at educational collaborations and the learning process through an ethnographic case study methodology. I also reflect on the research process, and point out implications from my study for further research, for outdoor and environmental/sustainability education practice, and for policy making.

9.1. Answering my research questions and evaluating my research contribution

Collaboration success factors

Following the renewed interest in outdoor education in the UK, which was highlighted by the publication of the 'Learning Outside the Classroom Manifesto' (DfES, 2006a) I set out to investigate the collaboration of botanic gardens, as outdoor education settings, with local schools. Through taking into account barriers to the provision of outdoor education such as fear and concern about health and safety, teachers' lack of confidence in teaching outdoors, and school curriculum restrictions and shortages of time, resources and support (Rickinson *et al.*, 2004), my research aimed to show how schools, by creating successful collaborations with botanic gardens, can overcome these barriers. I have made it clear that success in gardens – school collaborations involves the achievement of collaboration objectives, i.e. pupils' learning. Success also involves the achievement of participant satisfaction from the process and outcomes of the collaboration. It is important to define criteria for the success of the collaboration, as research often avoids looking

at, or clarifying, what success actually is, and in this way research can lack the potential to be of use for practitioners. I have identified the history of collaboration, individual collaboration and, organisational interdependency as three overarching factors influencing the success of collaboration between Wakehurst and the three local schools.

History of collaboration, as explained in Chapter 6, refers to previous collaborative endeavours that link each school with the gardens, and which shaped participants' beliefs, and determined focal points in the collaboration, resulting in 'habits' being formed. In order to present the patterns that emerged during the analysis, the data were presented as stories following the way the teachers collaborated with various educators. Whilst the stories produced represent only one version of what happened, the quality of the findings can be justified as the stories were the result of triangulating accounts from all the participants involved in the collaboration (both adults and children), including my own account and my observations of the events. Moreover, although the case studies of the research are the Wakehurst collaborations with each of three local primary schools, a within-case analysis focused on the interactions of those involved. This within-case analysis was essential in order to look at the case studies in a more in-depth way, and elicit the 'habits' of the collaboration. In so doing, a constant interplay between the individuals and the organisations became apparent during the telling of the stories.

Looking at the collaborative phenomena through the stories resulted in the development of the *Collaboration Double loop* model (p.222). Through the *Collaboration Double loop* I illustrated how the success of collaboration is based on the positive history of interorganisational collaboration that created trust and expectations amongst the participants for their future interactions. The first loop of the model represents the stable continuous character of the gardens – school collaborations whereby the teachers collaborated with the educators because of their organisations' commitment to each other that had been built and developed over the years. The transition from the first loop, which focuses on organisational level, to the second loop, which focuses on individuals, requires the teacher and the educator 'matching' with each other. The second loop represents a more advanced phase of collaboration which is characterised by creativity, enthusiasm, the development of innovative programmes, and, as a result, the further development of the Wakehurst learning programme.

The transition from the first loop to the second, i.e. where the educator and teacher 'match' is further elaborated through the *Individual Collaboration Continuum* (section 7.4, p.259) which is

grounded in the stories of educators and teachers, and explores whether and how the people involved developed relationships with each other. According to the *Individual Collaboration Continuum* the success of a collaboration can be attributed to the development of individual relationships. At one end of the continuum are interactions between teachers and educators that do not involve the development of a more personal working relationship between them, where the collaboration continues because of school and gardens commitment. At the other end of the continuum, teachers find educators with whom they share common characteristics, interests, attitudes, and enthusiasm, such as a love for nature, similar teaching techniques. Thus, they create innovative high quality experiences for the pupils which tend to lead to a successful collaboration that is stable and which develops over the years. As Michelle, a Wakehurst educator, argued 'collaboration is a personal thing'.

In Chapter 8, I explained how interdependency is the cornerstone of collaboration (see figure 8-1, p.277), and is one of the main reasons that the organisations come together. In this, provided that the reasons for collaborating are satisfied, then the collaboration can be regarded as successful. For example, the schools use the gardens because they can meet the curriculum requirements with tailor-made activities delivered by expert educators in high quality gardens' facilities, providing outdoor experiences for pupils in a safe environment. The gardens collaborate with the schools as they need an audience for their messages in relation to environmental issues, especially about plant conservation. In addition, the gardens, by meeting the schools' needs, will ensure high numbers of school visits which also increases general public visits, which is an essential element in justifying future funding. The schools also provide financial resources during the collaboration, covering the cost of the visits. They also contribute to the development of the gardens' learning programme by creating and testing new activities or by improving existing ones, and they contribute to special events, thus raising the gardens' profile. The findings suggest it is important that the environmental learning experiences offered in the gardens complement, rather than replicate, pupils' experiences at school. Through this, interdependency is stronger, participants are more enthusiastic and satisfied with the collaboration, including the pupils who are engaged with the experiences. When the experiences in the gardens happen indoors, and might equally well be implemented at school by the teacher, then dissatisfaction is likely to arise which means that interdependency, and the collaboration both, weaken (see figure 8-2).

My contribution to the environmental and outdoor education fields is in the identification of the history of collaboration, interdependency, and individual collaboration as three main factors

influencing the success of botanic gardens – school collaborations. Additionally, the development of the *Collaboration Double Loop* and the *Individual Collaboration Continuum* models show how these factors act, how they may vary in intensity, and how they may be structured. The models provide a picture of how history of collaboration and individual collaboration work, with interdependency constituting an overarching factor that is a prerequisite for the other factors to develop. These three factors that I found to be salient to Wakehurst – school collaborations, provide a framework that explains how collaborations can be effective which was lacking from the outdoor and environmental education literature, which usually focuses on the outcomes of the collaborations i.e. pupils' learning (for example Storksdieck *et al.*, 2005; Bunderson & Cooper, 1997; Dori & Tal, 2000; Bodzin, 2008; Bainer *et al.*, 2000), and overlooks the processes that create the structures and opportunities for pupils' learning.

In the data analysis chapters I have also signposted other collaboration factors that correspond to the factors identified in the literature as contributing to the success of interorganisational collaboration. These factors are presented in table 9-1 (p.363) and can be regarded as an interpretation of the factors I discussed in the literature review based on Mattessich & Monsey (1992, 2000) and IMS (1996) (see table 3-3, p.54). I have interpreted the factors in a way that is more meaningful for botanic gardens – school collaborations, and during the data analysis I provided examples of how the factors influenced collaborations. In doing so, it became apparent that teachers' and educators' backgrounds and personal characteristics influenced both their interactions, and the quality of learning experiences they provided to the pupils. Teachers and educators with more experience, but who also had high quality pedagogic skills, who valued outdoor and environmental education, and who were creative and eager to develop professionally, tended to be very enthusiastic for the collaboration, and got involved in developing and implementing the activities during the school visits. However, many years of teaching experience does not mean that good practice will always ensue, and my analysis provides examples of instances illustrating this.

Table 9-1 Categorisation of factors contributing to successful botanic gardens – school collaborations

Categories	Factors
Environment Includes geographic location and the wider context within which botanic gardens collaborate with schools	1.History of collaboration between botanic gardens and schools and between individuals of both organisations.
	2.Location / distance between the gardens and the schools
	3.Educational policy context including the national curriculum requirements and the Ofsted evaluation system
	4.Botanic gardens conservation policy which includes guidelines and setting goals for the botanic garden education
Membership Refers to skills, attitudes, values and other characteristics of the individuals, how they interact and also to the organisations' view of the collaboration	5.Individual collaboration/establishing relationship between educators and teachers
	6.Mutual respect, understanding, trust
	7.Members (organisations and individuals) see collaboration as in their self interest
	8.Commitment
	9.Appropriate cross section of members- Informal links
	10.Members skills, professional experience, values of outdoor and environmental education, age
Process/structure Refers to management, decision making and functions of the collaborative group	11.Learning in organisational and individual level of how to collaborate better
	12.Multiple layers of decision making including the head teachers, the head of the gardens learning programme, but also teachers and educators stake in decision making.
	13.Members share a stake in both process, the planning meetings and outcome, the implementation of the collaborative activities and the pupils' learning
	14.Flexibility / dynamic nature, experimentation and willingness to progress
	15.Development of clear roles and responsibilities, good organisation of the projects
	16.Understanding the school's needs in relation to the curriculum
	17. Appropriate pace of organising and implementing the collaborative projects
Communication Includes channels used to distribute information between the gardens and the schools	18.Open and frequent communication through the planning meetings and through the administration staff
	19.Established informal and formal communication links
Purpose Refers to the reasons for the development of the collaboration, the goals aimed at, and the respective tasks that will achieve these goals.	20.Interdependency drives the collaboration in relation to what botanic gardens and schools offer to each other.
	21.Concrete, attainable goals and objectives
	22.Shared vision between schools and botanic gardens, and/or between educators and teachers.
Resources Includes financial and human input and facilities/equipment that is needed	23.Sufficient funds i.e. financial support, people, teachers, educators, volunteers, facilities, educational materials
	24.Skilled convener, it can be the administration officers, the head teachers or informal links

Learning was not a factor that was included in my literature review of collaboration factors (see table 3-3), but was empathised in Huxham & Vangen's (2004) theory of collaborative advantage. In Chapter 6 I referred to the organisational and individual learning that needs to take place as part of the collaborative process. For example, the schools learn how to organise their visits to Wakehurst, the best time to book a visit, what is important for a planning meeting, and what they can get from the school visits in relation to their own organisational needs. The gardens learn about each school's characteristics so that they can involve them in other projects, and they learn the best ways they can link the learning programme with the national curriculum so that they will be able to satisfy school needs. That process can be illuminated using ideas around communities of practice (Lave & Wenger, 1991). In particular, as more collaboration takes place, the participants learn how to collaborate better, and also how to use the outcomes of the collaboration in their own practice. New teachers that enter the collaboration between their school and Wakehurst learn gradually through their planning with the educators, and by participating in the visits, how to organise their visit next time, and how most effectively to link the visit with their teaching in the school. The collaboration thus becomes a conducive environment for 'social learning' (Wals & van der Leij, 2007) as teachers and educators have the opportunity to learn from each other, understand the formal processes that they need to follow, e.g. planning meetings, and also develop their own more informal and personalised ways of communicating and working together. In relation to the *Collaboration Double Loop* model (Chapter 6) I have pointed out that, when the collaboration progresses from the first loop to the second, this involves 'double-loop learning' (Argyris & Schön, 1996). In doing this, both educator and teacher improve the effectiveness of their collaboration, but they also have a change in values as they challenge the predetermined ways in which the schools and gardens usually work, and they develop their own ways of working with each other, resulting in a more flexible, innovative, and creative collaboration.

Mattessich & Monsey (1992) reported that the collaboration factors that were identified in most of the studies they reviewed (see table 3-3, p.54) were those that comprised the membership category which referred to the skills, attitudes, points of views of the individuals and, culture and capacity of the organisations. One of the strongest factors I identified was *individual collaboration* based on the development of personal relationships between teachers and educators who 'matched' i.e. they shared common characteristics. Hence, the characteristics of those collaborating significantly influenced the success of botanic gardens – school collaborations, a finding that is in accordance with Mattessich & Monsey's (1992) point on the importance of the

membership category for the success of interorganisational collaboration. Furthermore, the compilation of the collaboration factors in table 9-1 does not aim to point out gaps in the original table that was based on the literature [table 3-3 includes a compilation of factors that were based on Mattessich & Monsey (1992, 2000) and IMS (1996)], but rather to show how the factors included in table 3-3 can be interpreted according to the type of organisations that interact, and the contexts within which they operate and co-operate. However, some of the factors included in table 3-3 may not always appear, depending on the purpose of the collaboration, and the kind of projects involved. For instance, the collaborations I studied did not aim to have an impact on the community (although that may have happened), and neither were they influenced by how the community perceived the collaboration. Hence, the factor 'Collaborative group seen as a leader in the community', did not apply in the collaborations within my research. In addition, some factors appeared more often, or had a stronger influence, than others; for instance, the factor 'Appropriate pace of organising and implementing the collaborative projects' did not appear very often, while factors such as 'Communication', 'Location', 'Members' characteristics' appeared much more frequently.

Looking at the factors and how they are related or share common characteristics, it becomes apparent that collaboration between gardens and schools has two levels, the organisational and the individual; however, I do not argue for a strict demarcation between these two. Rather, I want to emphasise what I see as inseparable interconnections between individuals and their work, and the social relations/structures in which they are embedded because as I have explained in Chapter 2, schools and botanic gardens do not operate in a social vacuum. Botanic gardens' roles have changed over the centuries and have been redirected over the last few decades towards environmental conservation following concern about the impact of human activity/development on the planet. Schools, on the other hand, are now consciously directing themselves mainly to meeting national curriculum standards, and achieving well in Ofsted inspections. Along with these main pressures, however, recent educational policies have also encouraged outdoor education and environmental/sustainability initiatives. In Chapter 8, I have illustrated how the collaborative relationship between schools and the gardens aims to achieve those additional objectives but in reality, there a priority is usually given to meeting national curriculum objectives during school's visits to the gardens. Some gardens initiatives, however, are more focused on environmental issues and environmental awareness; for example, the Billionth Seed project.

Despite the constraints outlined above, the important point that I want to highlight is individuals' agency to act within the interorganisational missions an understandings. Also, irrespective of the many practical constraints such as time, weather etc., individuals produce high quality, creative experiences for the pupils, by combining their ideas, talents and enthusiasm. The relationships that the individuals develop across botanic gardens and school collaborations enable them to have a more active role in planning and implementing new activities for the pupils, and, as a result, to influence the organisations, for example, to further develop the learning programme. Those successful collaborations are also examples of a different interpretation of the national curriculum, and provide another side of the argument, i.e. that national curriculum requirements and Ofsted inspections are not the only factors that restrict pupils' experiences in the gardens and over-emphasise the transmission of knowledge as the aim of education. It is clear that teachers' and educators' perceptions of those requirements, and their abilities to interpret and implement them are also important. My research indicates that teachers and educators who value the provision of outdoor and environmental education for pupils' personal development, who are creative, and who promote a cross curriculum approach through their teaching when they collaborate, can fulfil national curriculum requirements, meet Ofsted standards, and provide high quality environmental learning experiences in the gardens. On the other hand, I have some evidence that teachers and educators may also hold a more restrictive view of education in the gardens as mainly linked to the science curriculum, for example, which limits what they can develop when they collaborate together.

Caution is required, however, so as not to regard my argument as applicable to all collaborations between outdoor education settings and schools, which would be a generalisation beyond my intentions and ability to sustain within the limits of my case study research. Rather, my aim is to show to educators and teachers, managers, head teachers, and policy makers the potential of what can be achieved by the encouragement, establishment and nurturing of individuals' relationships.

Pupils' environmental learning experiences shaped through botanic gardens – school collaborations.

My view of pupils is as active learners who do not simply receive and store information given by experts, but continuously construct and reconstruct their experiences and the knowledge accruing from them, according not only to the experience itself, for example a school visit, but in relation

to other aspects of their school, and out of school, everyday lives. In Chapter 3 (section 3.8), I have presented the learning theories that underlie this point of view. In particular, I combined a constructivist perspective which emphasises the active role of the learner in constructing knowledge and the need to consider pupils' own ideas, belies, values and emotions when they enter a learning situation (DiEnno & Hilton, 2005; Robertson, 1994), with a sociocultural approach which emphasises that learning is built upon previous learning, not just of the individual but of the entire society in which they live, and the educator has the role of facilitating the individual's reaching their potential (Vygotsky, 1934). Additionally, underlying my point of view is Dewey's (1938) theory of experiential learning according to which an educative experience develops through interaction and continuity. Interaction entails the transactions of the individual with both the physical and human environment, and continuity involves creating links between the individual's previous and present experiences, and preparing them for future ones. These theories provided the stepping stone to investigate and answer my second research question that focused on how pupils' environmental learning experiences are shaped through the botanic gardens – school collaborations. In order to answer this research question I looked at whether pupils can identify links between their environmental learning experiences across settings, and how the organisations' collaboration can enable creating such links, whilst acknowledging that experience can be conceptualised by participants in different ways.

First of all, in Chapter 6 I explained that the pupils within my research expressed a positive opinion about the collaboration of their school with Wakehurst. They identified as an element of the relationship that both organisations had environmental-positive ethos and practices, and they stressed their personal connections with the place as they live locally and visit the gardens with friends and families; some pupils' parents also work at Wakehurst. I expected that the pupils' familiarity with the gardens might impact negatively on their enthusiasm for their visits to Wakehurst and their eagerness to learn. However, as explained in Chapter 6 that did not happen; instead, the pupils argued that every time they went to Wakehurst they saw and learned different things, went to areas of the gardens that they would not have been able to visit with their families, or did activities that they had not done in the past which implies their experience was still interesting over consecutive visits which helped them engage in their learning. Apart from personal interest, I found other processes, also identified by Burbules (2004), through which the pupils were engaged in environmental learning experiences in the gardens. In particular, the pupils were involved in their learning as they felt that the experience concerned them in some way, e.g. they had a personal connection with the gardens, and they also cared about the

experience which they usually anticipated enjoying. In other situations, the experiences engaged pupils' imagination as for example when they explored the gardens. The pupils were also engaged when the experience was interactive, when they had the opportunity to participate actively in the tasks, and when they used their senses to investigate plants.

Moreover, I found a variety of factors influencing pupils' environmental learning experiences that were also identified within Falk & Dierking's (2000) Contextual Model of Learning which had been developed in museums. Specifically, I found that pupils were motivated, had their own expectations of the activity, and were interested in, and used their previous knowledge during the environmental learning experiences provided by the gardens – school collaborations. These factors are included within the individual context of Falk & Dierking's model. My data also suggested the importance of the sociocultural mediation of pupils' learning by both peers and adults (e.g. educators, and other staff of the botanic gardens). These factors are included within the sociocultural context of Falk & Dierking's model. Pupils' familiarity with the gardens environment, whether the activities took place indoors or outdoors, and also with the reinforcing events and experiences that took place in other settings (e.g. at home or at school), also influenced pupils' experiences in the gardens. These factors are included within the physical context of Falk & Dierking's model.

The Contextual Model of Learning has been developed for looking at free-choice learning experiences in museums. As the environmental learning experiences shaped through the gardens – school collaborations were highly structured and with predetermined learning objectives, I found differences in the intensity of the influence of some factors. In particular, I found that the factor sociocultural mediation by the educators and other botanic gardens staff, was emphasised on many occasions by both pupils and teachers, not only because they have expertise, but also because they have developed a relationship with the pupils who anticipated meeting them again when they visited the gardens. Regarding the factor choice and control identified within the individual context of the model, there were many occasions during the visits where the pupils chose to focus their attention on elements of the gardens that they found interesting e.g. the ducks, or specific plants. However they were not given the opportunity to control more of their learning (see example in section 8.3, p.302). In those schools that have developed a long term relationship with the gardens, it may be easier to accommodate pupils' preferences about what they want to learn when they visit the gardens, either by asking the pupils before the visit or by the teacher and educator agreeing during the planning to be flexible and accommodate pupils'

emerging interest during the visit. In addition, those pupils who live locally, and who already have a certain familiarity with the gardens, are confident about expressing their preferences for the direction that their learning may develop in the gardens.

I will now focus more on the relationship of indoor and outdoor learning, a research area where, I argue, the literature on environmental and outdoor education is lacking (Rickinson *et al.*, 2004; Griffin, 2004; Kisiel, 2003; Dillon *et al.*, 2003). When I investigated whether and how the collaboration of Wakehurst with the local schools may create links between environmental learning experiences across school and gardens settings. I found that when the factors that contribute to the success of collaboration are combined, links between in-school and in-gardens environmental learning experiences can be achieved. Thus, my study has contributed to the research gaps outlined above by providing a framework which explains how indoor/in-school and outdoor/out-of-school learning can be linked.

As I have explained in Chapter 8, because of the interdependency, Wakehurst had developed its learning programme according to national curriculum requirements in order to meet the needs of schools. Furthermore, in Chapter 6 I have illustrated that, because of a history of collaboration between the local schools and the gardens, the teachers knew what to expect and trusted the collaboration process and outcomes. With a positive attitude, and also knowing how to collaborate, the teachers discussed their work in school with the educators, and how it could be best combined with the gardens activities. The fact that the schools had on-going relationships with the gardens enabled the educators to get to know something of pupils' sociocultural backgrounds, their life experiences at home and in the local community, and to use this to plan activities in the gardens. In addition, in Chapter 7, I have elucidated how specific educators and teachers developed personal relationships based on their common characteristics and interests, their common theories of learning and teaching, and I have argued that, through their interaction and enthusiasm they developed creative activities that were well linked with in-school work. More importantly, perhaps, pupils were able to identify the links between experiences in school and in the gardens. In particular, pupils actively created links during their visits; for example, by noticing things in the activities in the gardens that were linked with the topics they had been studying at school, or even by directing their learning in their gardens according to the knowledge they were getting at school in the same period. Moreover, during interviews, the pupils acknowledged the links between their environmental learning experiences in school and in the

gardens. I have also presented evidence of links between pupils' learning experiences in the gardens and at home, all of which are evidence of reinforced learning.

The collaboration of the gardens with the schools, provided the aforementioned factors are combined, can ensure that the pupils' previous knowledge and experiences can be used as a base on which to build new knowledge and new experiences in the gardens. The value of not always providing new knowledge to the pupils, but reinforcing the previous knowledge, has also been suggested by my research. Learning, as Falk & Dierking (2000) argue, is not something that happens in instant moments, or an isolated activity; rather it builds over time, and comprises both assimilating and accommodating processes. My findings also indicate that links between experiences in different settings, and knowledge from different sources, can merge together into a whole, and that pupils often find it difficult to discern the exact source of each element of the resulting merged knowledge. Based on that finding, it can be inferred that the pupils tend to organise their learning and the body of knowledge in their minds, around wider topics. These issues about learning also explain why researching learning is a difficult endeavour as Falk & Dierking (2000) also suggest. The difficulty lies in identifying the exact sources of learning, the moment that learning takes place and when the outcomes of learning become evident.

The importance of looking at individuals' learning experiences in different contexts and situations has been indicated by Falk & Dierking (2000) in their Model of Contextual Learning. According to this, an individual's learning (in museums) is influenced, amongst other factors, by the individual's prior knowledge, interest and beliefs, and their reinforcing events and experiences outside the learning context (i.e. the museum). In a similar way, Rickinson *et al.* (2009) have suggested the idea of a lens focusing on issues of relevance when looking at pupils' environmental learning experiences. Rickinson *et al.* examined the relevance of environmental learning to young people's lives in the present, focusing on personal experience, context and location, and also to their future lives, both social and vocational, as well as to their school learning. Their argument is that when young people regard learning as relevant to them, they become motivated and engaged. This focus on creating environmental learning experiences in the gardens that are relevant to pupils' experiences at school and to their other life experiences implies an interactive perspective to that experience (Roberts, 2008) which is based on Dewey's (1938) theory of learning and experience. As already mentioned, according to Dewey it is important for an educative experience to be interactive, and hence to create a continuum between previous experiences and present ones, in order to prepare the individual for future experiences –

and learning. This interactive perspective to experience has been expressed by my research participants on various occasions (e.g. Chapter 7, Cherry Tree Primary class 4 visit on WWII theme, p.232).

However, as I have discussed in the literature review (section 3.7.), experience should not be regarded as a concept with a stable and shared meaning, but rather as a multi-layered phenomenon that can be perceived and interpreted in various ways (Burbules, 2004; Fox, 2008; Roberts, 2008). I applied Roberts' (2008) categorisation of perspectives of experience in the data analysis. In doing so, another perspective that I also used was the neo-experiential perspective, which is related to neoliberal ideology. This perspective emphasises efficiency, and regards experience as instrumental and technical, that is tightly bounded in time and space, and its main aim is to fulfil curriculum objectives. For example, educators and teachers often stated that it was essential that school visits to Wakehurst were linked to the school curriculum. I have also, presented evidence of an embodied perspective to experience which emphasises direct experience and how this is lived through the senses in the present, rather than stressing the relationship of the experience with what precedes it and what might come after.

Issues can arise when participants hold different perspectives about a particular environmental learning experience in the gardens, which means that their expectations may not all be fulfilled. For instance, in Chapter 8 (section 8.2.4), I have explained that dissatisfaction may arise from their environmental learning experience when pupils express their embodied perspective on the experience, being interested in, and expecting to do, activities outdoors in the gardens, while the educators and the teachers may emphasise a more interactive or a neo-liberal perspective, and plan some activities indoors, because they are thinking more about how to fulfil curriculum requirements, and how to link experiences in the gardens with experiences in school. Roberts' (2008) categorisation of different perspectives of experience can be also seen in relation to Rickinson *et al*'s. (2009, p.44) lenses, 'looking at/ for different viewpoints among students and teachers'. Rickinson *et al.* have suggested that teachers may hold different viewpoints from students about environmental issues, about what is controversial, about what is relevant and meaningful to learn for a specific curriculum subject, and about the nature and value of empathy tasks. The convergence points between Rickinson *et al* .(2009) and Roberts (2008) are evident in that they both illustrate different perspectives between teachers and students which may result in some kind of tension between them, and which may result in students' disengagement from learning. Looking at the different perspectives that participants hold about environmental learning

experiences in the gardens does not aim to determine which is the most appropriate perspective. What is important, however, is that participants identify and acknowledge that they may hold different perspectives on the environmental learning experiences, and through negotiations reach a mutual agreement about those that they will follow. In some cases it may be possible to accommodate different perspectives while in other cases compromise is inevitable.

Robert's (2008) perspectives on experience are also useful, not only to identify which perspectives my research participants held, but also to look at the perspectives that were rather marginalised. In particular, I rarely found any data supporting the experience as praxis approach which is based on critical theory and considers experience in a more political sense, as a means of emancipation. In the last part of the data analysis, as I focused on environmental issues, whether and how these are addressed through botanic gardens – school collaborations, a deliberate avoidance of becoming more political became apparent. The categorisation of the activities I investigated during the fieldwork showed that most of the environmental learning experiences offered to the pupils were related to understanding the environment, plants, and ecosystems, and hence were aiming to transmitting knowledge, and develop a range of skills from observation and handling scientific equipment, to group work, creativity and the use of senses. A few activities were targeting behavioural change, and were related to promoting sustainable individual behaviours such as recycling, buying local food and fair-trade products, and growing your own food, all of them setting out to encourage a healthier and more ethical life style.

I have used Heimlich & Ardoin's (2008) review of behaviour theories and models that have influenced environmental education to understand the assumptions underpinning some of the activities at Wakehurst and their potential effect on pupils. Activities that focus on recycling/composting are based on the assumption that easily implemented behaviours may develop an individual's self-efficacy and enhance their sense of personal control so that they may pursue larger-scale lifestyle changes in the future. Activities such as 'Imagine the world without plants', although they were successful in terms of the learning objectives, and they had a long-lasting impact on pupils, they are based on the assumption that increasing knowledge on environmental issues, brings change in environmental attitudes and results in pro-environmental behaviours, an assumption which does not correspond to what actually happens in practice as Kolmuss & Agyeman (2002) have illustrated. In addition, activities which entail sending general environmental messages need to be paired with activities that address specific attitudes towards particular problems if they are to be effective (Heimlich & Ardoin, 2008).

While environmental learning experiences may focus on achieving conservation through establishing causuistic[32] or automatic and socially reinforced behaviours such as recycling, other experiences may focus on achieving conservation through behaviours that are the result of critical thinking. A rare example of that kind of learning experience in the gardens were the activities on fair-trade chocolate, and on food-miles which encouraged pupils to think about the social, environmental and economic aspects of environmental issues, and if and how they could adopt pro-environmental behaviours. Also, these were the only examples where an experience as praxis approach (Roberts, 2008) was manifested as the experiences entailed looking at inequalities in society and the environment.

In Chapter 8 it became apparent that how schools and the gardens depend on each other (the interdependency factor) and their organisational missions had a main influence on the environmental learning experiences offered to the pupils, and whether environmental issues were addressed. My findings suggest that, although the gardens need the schools to support them to fulfil their mission, i.e. plant conservation through science, and also public education (including school education), it seems that more attention is paid to satisfying the client – i.e. the schools –, and achieving high numbers of school visits as a result. This is an approach that risks marginalising the mission of raising public awareness on environmental issues. This has been illustrated from the beginning of the development of the Wakehurst learning programme which started by looking at creating activities based on the national curriculum. The fact that botanic gardens need to secure their future funding, with school links being one of the ways that the gardens can justify their funding, creates obvious constrains on how the learning programme will be able to sustain high numbers of school visits. The educators' background i.e. trained teachers with many years of teaching experience in schools, has also played a part in that attitude.

Other limitations in respect of the provision and impact of the environmental learning experiences should be also considered. A school visit in the gardens is possibly not going to change dramatically the knowledge, attitudes, or behaviours of the pupils towards the environment. Ardoin (2009) has also suggested that it is difficult to discern whether anyone's future actions are attributable or influenced by participation in a free-choice learning experience in settings such as

[32] Causuistic behaviours according to behaviour theory are the default/routine actions supported by social norms. 'Causuistic behaviours are often considered to be subconscious as they relate to societal – not individual – norms and values' (Heimlich & Ardoin, 2008, p.220).

aquariums, zoos, and botanic gardens. That comment also applies to the environmental learning experiences at Wakehurst – although they were not free-choice – as they were episodic in nature, had a short duration, and constituted only a small part of the variety of pupils' experiences. The challenge, then, for botanic gardens – school collaborations, and for the teachers and educators in particular, is to connect all these experiences so that they become cumulative events which may influence the individual, and may contribute to their learning and skill development. My research data indicate that pupils could actively relate knowledge and environmental friendly practices they learned at home or in school e.g. through recycling at home, Eco-school activities and enrichment weeks at school, with environment-related activities in the gardens, such as recycling, buying fair-trade products and looking after plants. The school – gardens collaborations have the potential to reinforce pupils' learning about environmental issues, as I have shown in Chapter 8 (section 8.5.4 p.351) with the example of the Cherry Tree Primary class 4 visit to Wakehurst on the topic of Rainforest and Tree Mythologies.

In the current situation, where climate change is becoming a significant topic for society and an issue discussed in the media, it is important that botanic gardens, through their collaboration with schools, build on that wider social discussion, and inspire and encourage pupils to be critically aware of environmental issues that the global society is currently facing. In summary, my research makes a contribution to environmental education by showing how the gardens – school collaborations can reinforce pupils' learning in respect of environmental issues, it raises potential problems inherent in such collaborations, and suggests areas that should be explored further if gardens and schools are to help develop environmentally aware, and critically thinking future citizens.

9.2. Reflections and implications

Research

Looking back to how I started my research, and especially how my research methodology changed resulting in an ethnographic case study, it is important to highlight the value of that change for investigating the issue of collaboration. My experience of Wakehurst's collaboration with the three local schools taught me that collaboration should not be regarded as a static,

predetermined activity. Collaboration is flexible, its strength and potentials change according to how the organisations' members change, and activities may vary according to the changing needs of the organisations, sometimes at the last minute. My initial understanding that each collaboration consisted mainly of school visits changed by the end of my first year, after having observed and/or participated in a variety of activities and projects such as Wild View, the Billionth Seed project, the 'Plant it, Grow it, Cook it, Eat it' professional development course, and other more informal interactions between members of the schools and the gardens.

My research indicates the benefits of applying ethnographic methods when investigating interorganisational collaboration, as this allows the researcher to capture multifaceted and collaborative phenomena. In 1991, two special issues of the *Applied Behavioural Science* journal, illustrated the value of case studies for investigating organisations' collaborative alliances, and the majority of the research that I investigated in my literature review did use case study methodology, confirming its usefulness. I still regard as appropriate, and valuable, the fact that I examined the collaborations as case studies. I also suggest that an ethnographic approach is essential to capture the different forms and expressions the collaboration may undergo especially when it concerns outdoor education settings and schools, where the collaboration is not based on a signed contract with strictly defined processes and predetermined outcomes. The study's limitations should be also noted as it was not designed as a pure ethnography from the outset. A pure ethnography methodology may have prompted me to focus more on collecting data from people who previously worked in the schools or in the gardens and had contributed to the development of Wakehurst in its collaboration with the local schools. That kind of data would have given me more information on the history of collaboration.

Prompted by that limitation, one of my recommendations for further research regards conducting a longitudinal study to examine the application and strength of my framework. My findings were based on the events I observed and information about past events, that enabled me to develop a framework of collaboration. It is important to test the applicability of the framework over time. Thus, it is important that the history of collaboration and individuals' relationships are followed through over a period of time, in particular to look at what keeps the organisations collaborating, or what leads to collaborations falling apart. Given that collaboration involves people whose life conditions may change, I expect their collaborations to by subject to pressures and possibly to change accordingly. It would also be interesting to follow through how individuals' passions for the collaboration, and for providing environmental learning experiences, develop over the years.

Looking at what happens when collaborations cease, why they cease, whether the organisations or the individuals decide to change partners, and at the impact of members leaving are all issues which require further investigation.

My ethnographic case study methodology has much to offer the investigation of environmental learning experiences in botanic gardens and other outdoor education settings. The fact that I collected data by observing and participating in the activities in the gardens and schools enabled me to identify the connections between the learning experiences across settings, and confirm or discard my assumptions from fieldwork drawing on interview data. Given that it is difficult to identify when learning takes place, it was important during my interviews to be very aware of what the pupils had experienced in the gardens, because I came to realise that, during the interviews, the pupils tended to report learning from other experiences closely related to the topics they were studying in the gardens and I found I was unable to distinguish precise sources of learning. My study indicates that the use of questionnaire-based quantitative methods to obtain data on learning as both process and outcome is rather limited.

As far as the data analysis is concerned, I applied thematic analysis to look at the three cases, i.e. each collaboration of Wakehurst with the local primary schools, which is a widely used method of analysing qualitative data. As part of the within-case analysis which focused on the interactions of the members of the organisations (teachers and educators). I have illustrated the use of stories in exploring collaborative phenomena. In particular the stories I developed and presented in Chapters 6 and 7 enabled me to identify patterns of interactions, factors that influence them and their value in developing models. My research does not suggest an innovative data analysis method, but rather the value of developing stories in investigating collaborative phenomena within outdoor and environmental education research. Furthermore, with regard to environmental learning experiences, and after observing how environmental issues were addressed in the gardens, I would be interested in investigating the use of alternative pedagogies for raising environmental awareness and, more importantly, for developing critical thinking (e.g. discussions and role plays), and the impact of these pedagogies on pupils' learning. Although an embodied, interactive, or even neo-experiential approach to experience all have a place, and a value in, botanic gardens education, it is of equal importance to inspire and encourage pupils to think about the current causes of environmental issues (from both natural and human perspectives), and the possible consequences for human development, which usually are the subject of an experience as praxis approach (Roberts, 2008). Given that environmental

/sustainability issues are complex, as clearly demonstrated in the recent debates on climate change, critical thinking is a crucial skill for young people to develop.

Outdoor and environmental education practice

My research has explored how Wakehurst collaborates with local schools and has highlighted the importance of a history of collaboration between the organisations and the range of ways in which the organisations depend on each other. It has also shown that, because the schools are local to the gardens, visits to Wakehurst could be organised on a lower budget because of easier access and lower transport costs. It therefore makes sense that, other thing being equal, schools should identify possible local outdoor education settings with which they could develop a more stable relationship, and which would enable them to overcome some of the barriers to outdoor learning opportunities, for example, as identified by Rickinson *et al.* (2004).

As I have explained in Chapter 6 (section 6.1), head teachers play an important role in the development of collaboration between their school and outdoor education settings. For example, at Cherry Tree Primary, the head teacher had a prominent role in establishing their collaboration with Wakehurst. Although head teachers cannot directly influence the development of individual relationships which may take place when educators and teachers 'match', they can create favourable conditions for this to happen. For example, the head teacher could encourage and enable regular collaboration with an outdoor education provider, thus, initiating and establishing a collaboration history between the organisations. In doing so, it is possible for schools to benefit from other opportunities arising from projects that outdoor education settings develop, and not just curriculum-focused visits. All these opportunities have the potential to enable teachers and educators, by collaborating more than through one-off events, to develop a familiarity with each other, and improve the way they work together. At the same time, while encouraging the regularity of collaboration activities, attention should be given to the ratio of indoor to outdoor activities offered at the outdoor setting, and care taken not to repeat activities that pupils have already experienced. If possible, it is useful to develop collaboration with an outdoor education setting where teachers of the school have already some personal connections. For example, informal links may exist because educators or members of their families have worked in the school in the past, or because educators have friendships with teachers, and these can be used as starting points for an interorganisational collaboration, as I have exemplified in Chapters 5 and 7.

Teachers and educators should also be aware that when they provide environmental learning experiences in outdoor education settings, participants may hold different approaches to the value and meaning of the experience. By applying Roberts' (2008) categorisation of approaches to experience, I have pointed out how pupils, teachers, and educators may have different expectations from the environmental learning experiences because of their previous experiences and personal interests. Acknowledging and taking into account such different perspectives during the outdoor activity planning processes, and trying to fulfil different expectations as much as possible, is important, not only for a successful collaboration, but also for achieving pupils engagement and satisfaction from the learning experiences.

As far as the kinds of environmental education that is offered in the gardens is concerned, my first suggestion focuses on professional development for the gardens' educators. Professional development at Wakehurst was already taking place for educators and volunteers in both formal and informal ways, and was taken seriously as a means of developing future skills and capabilities. This was mostly focused on improving the educators' and volunteers' scientific knowledge. However, it is equally important to engage all the people who work as part of the learning programme with thinking about how they can better fulfil the gardens' mission and especially raising the public's environmental awareness. That kind of professional development does not necessarily have to be part of a formal training programme as it can be provided during the meetings that the educators organise to discuss issues about their practice. Whilst the need to emphasise the links with the national curriculum are important, educators could also suggest other options to the teachers, for example, those related to raising environmental issues in a more direct way. Additionally, during planning meetings educators could ask about the school's environmental work and identify ways in which the gardens could support the school's environmental programmes. They could also discuss pupils' knowledge and attitudes, and use the pupils' previous knowledge and experiences to build on during the activities in the gardens.

Having been an educator in a newly established botanic gardens in Greece, and struggling to initiate and develop the gardens' learning programme on my own, I have learned enormously from observing the Wakehurst learning programme's everyday practices. If I were to go back to that Greek garden, I would start the re-development of the programme by approaching local schools, identifying teachers who would be interested in establishing a more stable relationship with the gardens, and use this kind of relationship to re-build the learning programme. I would

certainly incorporate coverage of the national curriculum into the programme, but at the same time I would develop activities related to the gardens' mission, i.e. Greek native flora conservation, and I would also adopt critical thinking pedagogies. In addition, I would develop links with local schools by contributing to their own school-based environmental activities e.g. by organising professional development courses, by developing outreach programmes in schools, or by developing activities in the gardens based on the school environmental programmes. With these examples of how I would improve my own practice in the Greek context, I believe that other botanic gardens in other countries could also benefit from adopting and adjusting elements of the Wakehurst learning programme and its collaboration with the local schools. Moreover, building these links, especially at the beginning of a botanic garden programme, is likely to increase general public visitor numbers, which is a very important issue for the work of a botanic gardens as pupils may go back to the gardens with friends and families. On the other hand, looking from school perspective, and as the head of Wakehurst learning programme has suggested (see 8.3.1.), for the schools which are not in close proximity to botanic gardens (i.e. the majority of schools), they could develop a relationship with a local outdoor education setting, or a museum. Having easy access to an education centre could enable them to overcome practical barriers, organise regular visits to the centre, develop more in-depth relationship with the educators, and create links between the experiences in the centre and the teaching in school resulting in pupils' reinforced learning.

Policy

My research has been influenced and in part inspired, by the renewed interest in outdoor education which was illustrated with the publication of the 'Learning Outside the Classroom Manifesto' (DfES, 2006a), and the development of other closely related initiatives such as, Growing Schools, the RHS campaign for School Gardening, the Sustainable Schools, and the United Nations Decade of ESD (managed by UNESCO), etc. In terms of more recent educational developments in England, under the new Conservative and Liberal Democrat coalition government elected in May 2010, the previously called Department for Children, Schools and Families has been renamed the Department for Education which reflects a shift of focus back to core educational objectives in schools, an emphasis on core subjects, and on the raising of standards. There are, of course, considerable tensions in all this, especially at a time of diminishing resource.

Along the same lines, with the government's Localism Bill which aims to shift power from central government to the hands of individuals, communities, and councils (House of Commons, 2010), the Department for Education has announced its plans to give more freedom and authority to schools, and school leaders in particular (DfE, 2010), to make their own decisions about what is important to them. This new emphasis on localism and empowering schools seems very relevant to my research's focus on developing collaborations between schools and their local outdoor education settings which will provide pupils which enhanced learning experiences. However, as the Department for Education's plans include an emphasis on the core subjects of English, mathematics, and science, the future of initiatives related to outdoor education will depend on individual school choices rather than the Departments' policy guidelines. *De facto*, of course, it always did as schools inevitably had to select from a plethora of initiatives those which they wished to emphasise; in this sense, little has changed. The national curriculum is also currently under revision, and the Department is conducting a consultation for that purpose. One encouraging sign in relation to educational developments is that the Department has already included on its web-site, information about its intention to support Education for Sustainable Development, clarifying that schools need to make their own judgments on how sustainable development is to be reflected in their ethos, day-to-day operations and through education for sustainable development[33]. In this current and rather fluid climate of changes across the schools sector, any policy recommendations can only be tentative in relation to whether they can contribute to the governments' developing education policy future plans.

My research has presented evidence that by developing long-term relationships with outdoor education settings, schools can provide outdoor education to pupils, overcoming barriers (e.g. those identified by Rickinson *et al.*, 2004) in the process, and providing benefits for all participants involved. I have also presented evidence of how national curriculum requirements can be fulfilled through activities in an outdoor education setting, focusing on issues that teachers may not be as confident to deliver in school, how such learning benefits can go beyond knowledge and skills acquisition to include benefits for pupils' personal and social development, and how successful collaborations can provide high quality imaginative environmental learning experiences in an authentic context such as a botanic gardens. Establishing close relationships between the organisations, that is, between teachers and educators, can result in tailor-made

[33]http://www.education.gov.uk/schools/toolsandinitiatives/sustainabledevelopment/a0070736/what-is-sustainable-development

experiences according to a particular class' level and needs. I have also shown how these collaborations can link successfully environmental learning experiences in school and in the gardens, resulting in pupils' reinforcing their learning – a finding that has significance for both outdoor and environmental education.

Case studies of what schools can achieve in collaboration with outdoor education settings, commissioned and publicised by the Department for Education could inspire other schools to follow in their steps. More importantly, perhaps, initiatives supported by the Department and/or from NGOs, that encourage outdoor education, should also aim to encourage the development of more stable relationships between outdoor education settings and schools. It is of equal importance that any initiatives are targeted at creating quality outdoor experiences for pupils. I have shown in my research that the collaboration with outdoor education settings can have multiple benefits for the whole school, enriching the environmental education school activities, including the development and use of the school grounds. Similarly, Barratt Hacking *et al.*'s (2010) report on the impact of Sustainable Schools has also provided evidence and highlighted the importance of bringing people's learning experiences together, encouraging young people to see the school and community as learning resources, giving pupils' active experience of the wider world which is linked into school based learning, and contributing to their sense of place in the local community and environment.

As the government's plans include an emphasis on autonomy and empowerment of local communities and individual schools (House of Commons, 2010; DfE, 2010), my research provides a model for schools on how to develop collaboration with their local education settings which can help them meet educational goals. Additionally, taking into consideration the Department for Education's emphasis on core subjects, which include science, my research has illustrated how the collaboration of schools with Wakehurst has contributed to delivering the science curriculum in ways that provided the support that the teachers called for. The 2010 White Paper (DfE, 2010), as part of giving advice to the schools in their new more independent role, includes encouragement to establish collaborations with other schools for mutual improvement. My research has showcased the benefits for schools and their pupils of establishing collaborations with outdoor education settings, and this is a suggestion that the Department for Education, and others, should consider if it is to give advice on how schools could successfully become more independent and improve their education provision. A significant 'other' here will likely be the

Sustainable Schools Alliance[34] which is an umbrella group being set up by Sustainability & Environmental Education (SE-Ed), DEA (global learning), and the National Children's Bureau (NCB) which aims to promote and support the idea and practice of sustainable schools.

My research has shown evidence of what can be achieved when botanic gardens and primary schools have an interdependence, they have a history of collaboration, and teachers and educators with common characteristics develop relationships as part of their collaboration. These have been some of the main factors amongst others that I have discussed in the data analysis. Apart from the benefits, however, I have pointed out less successful interactions of teachers and educators and how problems may arise causing dissatisfaction to the participants, including the pupils. My research has implications for teacher training (pre- and in-service) policy. For example, teacher training courses can include illustrations of how different interpretations of the national curriculum are possible through different, imaginative ways of fulfilling its requirements by combining learning at school and learning in an outdoor/environmental education centre, and how establishing long term relationship with such a setting and its educators can help teachers to achieve these. Training may address ways through which teachers may link pupils' learning experiences in school with experiences out of school, including both curricular and cross-curricular learning for a variety of subjects. It is also important to provide training to teachers to help them develop tailor-made activities outdoors with and without collaboration with educators from gardens. Training may also entail raising awareness not only of the benefit of outdoor/environmental education but of the factors that may contribute to a successful collaboration and potential problems.

During my research all of the teachers said that they valued outdoor education within and out of the school boundaries as it enhanced pupils' learning and their personal development. However, they did not use the school grounds very much which can be partly explained by their heavy work load (out of the classroom activities need lots of organising by the teacher), and other priorities. It can also be attributed to a lack of confidence in how to use the outdoor space. The use of the grounds that I observed included some extra-curricular activities such as the gardening and nature clubs, Eco-school activities, and sports clubs. In terms of the curriculum, the grounds were mainly used for PE, but only rarely for science or other subjects. On many occasions the teachers highlighted that one of the reasons they were visiting Wakehurst was that the activities were planned and implemented by the expert educators. Some teachers also referred to the regularity of

[34] http://www.se-ed.org.uk/news/ssa-news.html

the visits to outdoor education settings being dependent on the physical distance between the settings and the school, and expressed a preference for educators coming into the school and use its outdoor space. Policy makers can play a role in encouraging outdoor education settings to set up outreach programmes which may increase the regularity of outdoor education for the pupils within the school, but also by setting up professional and initial training for teachers about the use of the school grounds for a variety of subjects such as science, history, English, geography.

As far as implications for environmental/sustainability education are concerned, collaborative relationships have the potential to enhance environmental learning. This argument is based on the evidence that the pupils in my research study identified common environmentally friendly ethos and practices between the gardens and school, and linked their environmental learning experiences across the settings which indicated reinforced learning. Outdoor education in environmental centres such as botanic gardens can reinforce environmental learning that happens in school. However, centres such as botanic gardens, and other museums, which mission involves environmental conservation need to communicate their educational messages in a more direct way, obviously avoiding indoctrination, rather than hoping that messages can be conveyed subliminally.

A recent UNESCO (2010) (pre-general election) publication reported that ESD development in the UK is an important emerging field of educational policy, practice and research, and that, in formal education, Sustainable Schools, Eco-schools and other initiatives receive support and popularity from government and non-government stakeholders. The publication reported an interest by stakeholders across the UK in understanding through research how sustainable development learning occurs in various educational contexts. Within this positive climate of promoting the ESD decade in the UK, the new government's stated intentions to continue supporting ESD, and the advent of the Sustainable Schools Alliance, my research has emphasised the importance of creating links between pupils' environmental learning experiences across settings, and has shown that one effective way this can be achieved is through collaborations between school and outdoor education settings. As a consequence, I suggest that the Sustainable Schools Alliance can support ESD by disseminating information on case studies of successful Sustainable Schools collaborations, and also encourage partnerships of local authorities and NGOs to organise events, e.g. conferences and workshops, that will enable schools to come together with other sustainability related educational settings and develop collaborations.

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> Now, what I want is, Facts. Teach these boys and girls nothing but Facts. Facts alone are wanted in life. Plant nothing else, and root out everything else. You can only form the minds of reasoning animals upon Facts: nothing else will ever be of any service to them. This is the principle on which I bring up these children. Stick to Facts, Sir! (Dickens, 1854, Hard Times: 47). Penguin ed. 1969 pp.47

In 1854, Dickens criticised contemporary educational provision because it focused on facts rather than understanding. In similar vein, Banksy's piece of art can be seen as a metaphor for the current education system that in many ways in practice still regards young people as empty vessels into which knowledge can be poured by the expert adults.

Picture 9-1 Think Tank bollard Banksy (2006)
(***http://www.artofthestate.co.uk/Banksy/banksy_santas_ghetto_2006.htm***)

The recently appointed education secretary Michael Gove who is leading the current review of the national curriculum emphasised the transmission of facts as the purpose of education and attacked the previous government for removing 'actual content' in favour of a more thematic approach (Gove, 2011). Gove, also, explained that the Department of Education policy will aim at

transforming the over-prescriptive national curriculum that contained too many guidelines to a national curriculum that will emphasise a core of vital knowledge while leaving teachers free to decide how this should be conveyed (ibid). Having said that, it does seem contradictory that Gove's approach that emphasises the transmission of facts is also combined with the government's localism agenda that aims to give more autonomy and control to the local communities and its individuals, a process which will require citizens that have developed critical thinking, confidence, and other personal and social skills rather than just being able to absorb knowledge.

My research has shed new light on how pupils learn when an external organisation (in my case, a botanic gardens) and a school collaborate. Where this works well, pupils are helped to bring their experiences from different settings (the gardens, school, home, and other contexts, and the media) together, are helped to identify links between in-school and in-gardens learning, and to use their pre-existing knowledge and experience to build on their new experiences to reinforce that learning, and generate new knowledge and understanding. My research has also shed light on a range of factors that help teachers and educators work effectively together to provide stimulating experiences for the pupils in the gardens that link to existing and future activity, and enable learning, as outlined above. These factors include the history of the school – gardens collaboration, how individual teacher – educator collaboration had developed, and the interdependency of botanic gardens and schools that result in mutual benefits.

During my research I found that the national curriculum and the Ofsted school inspection system tended to restrict the experiences offered to pupils in the gardens, the result of which was an overemphasis on knowledge transmission, and an under-emphasis on experiential aspects of schooling. However, it was also clear that teachers' and educators' interpretation of the national curriculum, and their perception of the Ofsted inspections, could, if they were so minded, have a positive impact on the environmental learning experiences being offered to the pupils in the gardens. I have already commented on, and provided evidence of educators and teachers who were more creative in finding different ways to use the curriculum, and provide high quality environmental learning experiences. More importantly, perhaps, my research has shown evidence that pupils merge the knowledge and experiences from different contexts and settings into main themes rather than storing information in compartmentalised subjects. This finding contradicts and challenges the effectiveness and appropriateness of the Department for Education's policy plans.

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Appendix

1. Factors from the literature that contribute to successful collaboration

Table Appendix 1-1 Categorisation of factors contributing to successful collaboration

Factors	Description
Environment factors 1.History of collaboration	Having a history of collaboration in the community offers the potential the partners to understand the expectations and needs of each other and also the history contributes to trust building (Mattessich & Monsey, 1992).
2.Collaborative group seen as a leader in the community	The collaborative group is perceived within the community as a leader at least related to the goals and activities it intends to accomplish. The legitimacy within the community will facilitate any changes the collaboration aims to achieve (Mattessich & Monsey, 1992).
3.Political social climate favourable	A positive climate or at least not opposing to the collaboration from the political leaders, opinion makers, resource providers and the public is important they may even act as motivators or facilitators to the collaboration (Mattessich & Monsey, 1992).
4.Location/ distance between the organisations	Co-location of the partner organizations may facilitate their collaboration but successful collaborations can occur with non co-located partners (Gibson *et al.,* 2007)
Membership 5.Mutual respect, understanding, trust	The members of the collaborative group have an understanding and respect for each other and their respective organisations, including how they operate, cultural norms and values, limitations and expectations (Mattessich & Monsey, 1992). It is important to recognise and accommodate the different organisational structures and cultures of museums and schools including planning style, schedules, communication and the accessibility of museums. For example teachers need to develop an understanding of how the museums function educationally and how they can complement schools and museums need to understand the school community (IMS, 1996).
6.Appropriate cross section of members	The collaborative group includes representatives, carefully chosen, from each segment of the community that may be influenced by the collaboration (Mattessich & Monsey, 1992). Effective collaborations between people in organisations such as schools and museums should be inclusive (Hazelroth & Moore, 1998). IMS (1996) argues for three levels of involvement in schools museums collaboration i.e. a) educators and teachers, b) administrators and c) parent and community
7.Members see collaboration as in their self interest	The partners believe that the benefits of collaboration will offset costs such as loss of autonomy. These benefits are motivation for the organisations to enter into the collaboration (Mattessich & Monsey, 1992). IMS (1996) speaks of providing the teachers benefits which they can use (tangible benefits). Teachers need time, professional development opportunities and relevant curriculum materials that they can use in the classroom. Museums have allocated resources that enabled teachers to participate in planning and project development.

8.Ability to compromise	Collaborating partners are able to compromise since the decisions within the collaboration cannot fulfil everybody's preferences. Rigid rules and expectations will hinder the success of a collaboration (Mattessich & Monsey, 1992).
9.Commitment	Mutual investment of the organisations in the collaboration is essential both in committing people who are willing and eager to collaborate and allowing enough time to do so. A long term commitment is likely to produce more results than a short term commitment (Thorkildsen & Stein 1996).
10.Establish relationship between people	Having a well defined organisational structure in a collaboration is important because it creates a sense of stability but associations must be established and encouraged among individual participants (Cobb & Quagglia, 1994). Key personnel in a successful partnership like each other, argues Shaw (2003) who investigated a land trust and government department partnership.
Process/ structure 11.Multiple layers of decision making	Every level within each organisation, from upper management to the operations participates in decision making in the collaboration. Enabling all the members to participate in decision making builds stronger ties and greater success (Mattessich & Monsey, 1992).
12.Members share a stake in both process and outcome	The partners feel ownership of both the process and outcomes of the collaboration. Overtime ownership should be monitored and changes made in order to ensure the continuation of the feeling (Mattessich & Monsey, 1992).
13.Flexibility/ dynamic nature	The collaborative groups need to be flexible in their structure and methods and remain open to varied ways of organising and accomplishing its goals (Mattessich & Monsey, 1992; Thorkildsen & Stein, 1996). A museum school partnership will be stronger when educators from both organisations are free to experiment, shift directions and grow professionally (IMS, 1996).
14.Development of clear roles and policy guidelines	Responsibilities, roles and rights and how they can be used, fulfilled should be clearly defined and understood by all the partners through mutual agreement and open communication (Mattessich & Monsey, 1992). It is also important to build on the respective strengths of each partner and compensate for the weaknesses or challenges. Some responsibilities are more appropriate for schools and teachers and some more appropriate for museums (IMS, 1996).
15.Adaptability	If changes occur in the environment of the collaboration the partners should be able to sustain their relationship and being able to accommodate the changes even the vision and goals may be necessary to be revised (Mattessich & Monsey, 1992).
16.Appropriate pace of development	It is important the collaborative group to coordinate all the people, organisations, activities related to the collaboration, organising the right amount of work at the right pace (Mattessich *et al.*, 2001).

17.Understanding the school's needs in relation to the curriculum	IMS (1996) suggests that long-term partnerships succeed because the partners have identified a problem to be solved or a need to be fulfilled and then worked to match museum resources to what is happening in the classroom. The partners should match the museum resources with what is happening in the classroom. The collaborative projects should support reform and teachers and correlate the project to the curriculum.
Communication 18.Open and frequent communication	The partners should interact often, update each other, discuss issues and convey all the necessary information. A system of communication should be established in the beginning of the collaboration and selective distribution of information should be avoided (Mattessich & Monsey, 1992). Dialogue is important and to be build through formal mechanisms such as advisory teams or open houses for teaches and administrators help promoting the dialogue. When trust is established open channels of communication result. Administrators help establishing the information flow (IMS, 1996).
19.Established informal and formal communication links	Apart from the official agreed channels of communication, in addition members through personal connections that will ensure the information flow. Devoting social time and getting to know each other is important for that communication channel to develop (Mattessich & Monsey, 1992).
Purpose 20.Concrete, attainable goals and objectives	The goals and objectives should be feasible and stated clearly to all partners. Lack of clarity or attainability will diminish enthusiasm (Mattessich & Monsey, 1992). Through careful planning it is important to set the goals and objectives and integrate ongoing evaluation (IMS, 1996).
21.Shared vision	Collaborating partners should have the same vision, mutual agreed mission, objectives and strategy. That may exist from the beginning of the collaboration or may be developed later on. Imbalances of power should be handled for the group to develop a shared vision (Mattessich *et al.* 2001). Creating a shared vision entail what the partnership wants to accomplish and how. While a relationship with educators and teachers is developed, personal hopes should be communicated and translated into a vision that all the participants would like the partnership to be (IMS, 1996).
22.Unique purpose	The mission and goals of the interorganisational collaboration may differ from the mission and approach of the individual organisations (Mattessich & Monsey, 1992).
Resources 23.Sufficient funds	The collaborative group needs an adequate and financial support for its joint activities (Mattessich & Monsey, 1992). An investment in human and financial capital from both partners is essential to a lasting program. When planning a project it should be determined what resources are available to enable teachers to participate fully. Museums built in funding for program coordinators, educators (IMS, 1996). Berry (1998) highlighted as factors that influence negatively the collaboration of museums and schools the loss of funding, shrinking school budgets, not enough money for transportation.
24.Skilled convener	The individual that convenes the collaboration need organising and interpersonal skills and fulfil its role with fairness. These characteristics make the convener respected and legitimate for the partners (Mattessich & Monsey, 1992). A liaison between museum and school will smooth project administration and communication (IMS, 1996).

2. Overview of the Wakehurst – schools collaborative activities 2006-2007.

Table Appendix 2-1 Cherry Tree Primary visits to Wakehurst during 2006-2007

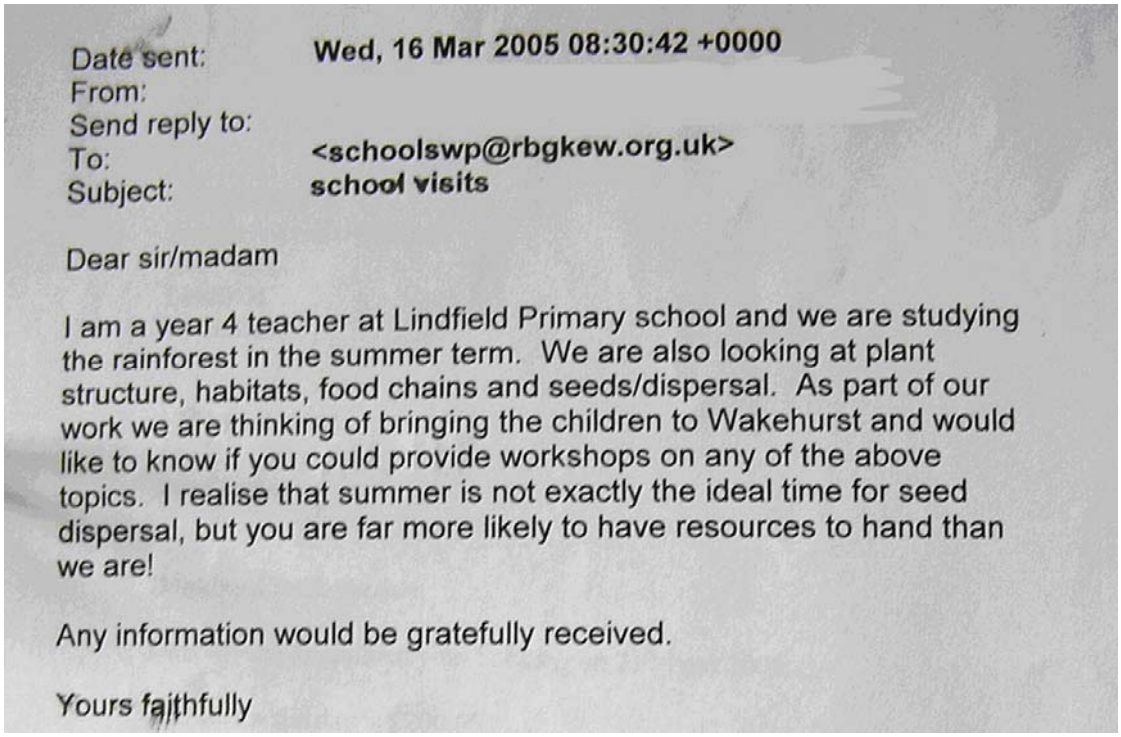
Class	Teacher	Date	Theme of the visit	Activities	Place of the activities	Curriculum subject	Curriculum topic	Educator
Class 1 Reception &Yr1 (19 pupils)	Esther	3/5/2007	Plants and flowers shop, story of a sunflower, Trail	Story of sunflower	Chapel Mansion	Science,	Growing	Kelly
				Sensory trail with storysticks	Gardens			
				Lunch	Paddock			
				The tiny seed story	Paddock			
				Flower shop, tour and buy plants	Visitor Centre			
Class 2 Yr1&2 (26 pupils)	Esther & Karen	18/9/2006	Get Creative	Plant Eater Workshop	Billiard Room Mansion	Science Personal, Social and Health education Art and design	Ourselves/senses, healthy living	Kelly
				Sensory trail with story sticks	Garden			
				Lunch	Paddock			
				Ephemeral art	Garden			
		19/3/2007	Plants	Introduction	Billiard room Mansion	(the science topic at school was space so no connection with the curriculum)	-	Elsa
				Plant a seed	Potting shed			
				Story of a sunflower	Billiard room Mansion			
				Lunch	Paddock			

				Trail	Gardens			
				Make a spring crown	Billiard Room Mansion			
		11/6/2007	Habitats	Camouflage	Gardens (near the compost corner)	Science	Habitats	Juliet
				Minibeast hunt	Meadow gardens			
				Trail with story sticks	Gardens			
				Pond dipping	Ponds			
Class 3 Yr3 (22 pupils)	John	29/9/2006	Healthy Eating, William Morris	Plant Eater workshop	Billiard Room Mansion	Art and design, Personal, Social and Health education Design and technology	William Morris and healthy eating	Heather
				Parts of plant trail &sketching	Garden			
				Lunch	Paddock			
				Ephemeral Art	Garden			
		21/2/2007	Rocks & Soils→Plants	Revise parts of a plant and their functions	Billiard Room Mansion	– (they were doing Rocks and soils at school but the educator decided to do	–	Kelly
				Healthy/unhealthy plants workshop	Billiard Room Mansion			
				Healthy/unhealthy plants trail	Gardens			
				Lunch	Library Mansion			

				Art-make a picture of a healthy plant	Chapel Mansion	something different)		
				'Imagine a world without plants'	Chapel Mansion			
Class 4 Yr4&5 (25 pupils)	Joyce	20/10/2006	WWII, Food miles, Recycling	Foodmiles	Billiard Room Mansion	History, Environmental Education	WWII, Recycling because of Eco-school activity	Heather
				Walk to Pinetum (sketching)	Pinetum			
				Lunch	Paddock			
				Recycling Trail to Compost Corner	Gardens			
		26/3/2007	Shelter building	Introduction	Library Mansion	English (literacy), Design and Technology, Science (next term topic weather Geography tentative links with weather conditions	Reading the book 'Wolf brother' and survival skills	Michelle
				Shelter building	Pearcelands Wood			
				Lunch	Pearcelands Wood			
				Survival trail	Bethlehem Woods			
		18/5/2007	Rainforest & tree	Rainforest presentation	Chapel Mansion	Literacy Geography	India (topic, cross curriculum	Michelle
				Rainforest music	Chapel Mansion			

			mythologies	Tale from India	Chapel Mansion	Religious education Also this is the drama term for the school	approach) Hinduism Rainforest	
				Lunch	Paddock			
				Tree mythologies	Gardens			
Class 5 Yr5&6 (27 pupils)	Mark	3/10/2006	A place to grow, how plants adapt	A place to grow	Rock walk and Bethlehem woods	Science	A place to grow, plant adaptation	Kelly
				Parterres Art-design a plant	MSB			
				Lunch	Paddock			
				Aren't plants amazing-adaptation trail	Gardens			
		6/3/2007	Parts of a plant, Healthy Unhealthy plants (revision)	Healthy/Unhealthy plants& flower structure	Laboratory Mansion	Science	Life processes and living things	Heather→ Margaret
				Lifecycle trail	Garden			
				Lunch	Paddock			
				Seed dispersal & Germination	Laboratory Mansion			
KS2 Class 3, 4, 5 (64 pupils)	John Joyce Mark	12/6/2007	Orienteering & sketching	Orienteering	Paddock & Pinetum	PE, Art and design	Orienteering Observational sketching	Non assisted
				Lunch	Paddock			
				Sketching	Ponds			

Document Appendix 2-1 Communication of Elm Tree Primary teacher with Wakehurst in relation to the school visit in 2005-2006 school year.



Date sent: Wed, 16 Mar 2005 08:30:42 +0000
From:
Send reply to:
To: <schoolswp@rbgkew.org.uk>
Subject: school visits

Dear sir/madam

I am a year 4 teacher at Lindfield Primary school and we are studying the rainforest in the summer term. We are also looking at plant structure, habitats, food chains and seeds/dispersal. As part of our work we are thinking of bringing the children to Wakehurst and would like to know if you could provide workshops on any of the above topics. I realise that summer is not exactly the ideal time for seed dispersal, but you are far more likely to have resources to hand than we are!

Any information would be gratefully received.

Yours faithfully

Table Appendix 2-2 Elm Tree Primary visit to Wakehurst during 2006-2007

Class	Teacher	Date	Theme of the visit	Activities	Place of the activities	Curriculum subject	Curriculum topic	Educator
Class 4 Yr4 (64 pupils)	Ariel, Cecilia	20/6/2007	Rainforest	Rainforest music	Chapel	Geography Science Literacy	Rainforest (topic cross curriculum approach) Adaptations, Literacy	Juliet Valerie
				Rainforest Trail	Gardens			
				Lunch	Paddock			
				Rainforest workshop	Billiard room			
				Chocolate challenge and fairtrade	Amphitheatre			

Table Appendix 2-3 Oak Tree Primary visit to Wakehurst Place during 2006-2007

Class	Teacher	Date	Theme of the visit	Activities	Place of the activities	Curriculum subject	Curriculum topic	Educator
Class 6 Yr6 (31 pupils)	Amy Anna	21/6/2007	Habitats, Food chains	Trail on the way to Field studies centre	Gardens	Science	Habitats, Interdependence Adaptations	Michelle
				Pond dipping	Wetlands			

					Westwood lake			
				Minibeast identification	Field studies centre			
				Terrestrial Minibeast hunt and comparing habitats	Outside the Fieldstudies centre			

Table Appendix 2-4 Professional Development course

Oak Tree Primary teachers	Date	Theme of the course	Activities	Place of the activities	Learning objectives	Educators
Claire Yr4 class teacher Teaching assistant Yr4 class	5/6/2007	Plant it, grow it, cook it, eat it	Plant it	Potting shed and school garden	How to develop an allotment in the school grounds	Carolyne Rachel Alice Andrew (gardeners)
			Grow it Healthy/Unhealthy plant workshop	Chapel and gardens	How to use the allotment to teach the National curriculum	Elsa
			Cook it Plant Eater workshop	Laboratory		Michelle
			Eat it Make a healthy sandwich	Conference Room	How to teach healthy eating	Michelle, Elsa

3. Describing the contexts of the research

3.1 Setting the scene

This part of the thesis locates the context of the research at district council level in terms of their geographical locations and economic and social conditions, and continues to describe the research settings (the gardens and the schools) within their local communities. The purpose of this exercise is to provide the reader with an understanding of the location of the study and the context within which school-garden collaborations take place and pupils' learn. The school descriptions will include the school facilities, the classes' organisation, pupils' characteristics, pupils' achievements, the curriculum, outdoor education, environmental education and any indications of the collaboration of the school with Wakehurst Place. All this information will be extracted from the Ofsted reports, DfES performance reports (SATs) and the schools' websites. These descriptions will show the school's policy, how the school presents itself and also how the school is evaluated. Last, Wakehurst Place, Kew gardens will be described, including the landscape characteristics and also the role and work of the gardens, with emphasis on the learning programme and educational provision for primary schools.

3.2 Location and Characteristics

Economic and social conditions

Wakehurst and the schools of my research are located in the Mid Sussex Local Authority District within the County of West Sussex in South East England (map 1). The Mid Sussex district covers 334 km² and the population according to 2006 estimates is 129,000 people with density 386people / km² (map 2) (Office for National Statistics, 2008). The District has three main towns: Burgess Hill, East Grinstead and Haywards Heath and the remainder of the District is largely rural in character with 23 villages and many small hamlets. Sixty percent of the population lives in the three main towns with the remaining forty percent living in the villages and rural areas (Office for National Statistics, 2008). Gatwick which is the second largest airport in the UK is situated on the borders of Mid Sussex.

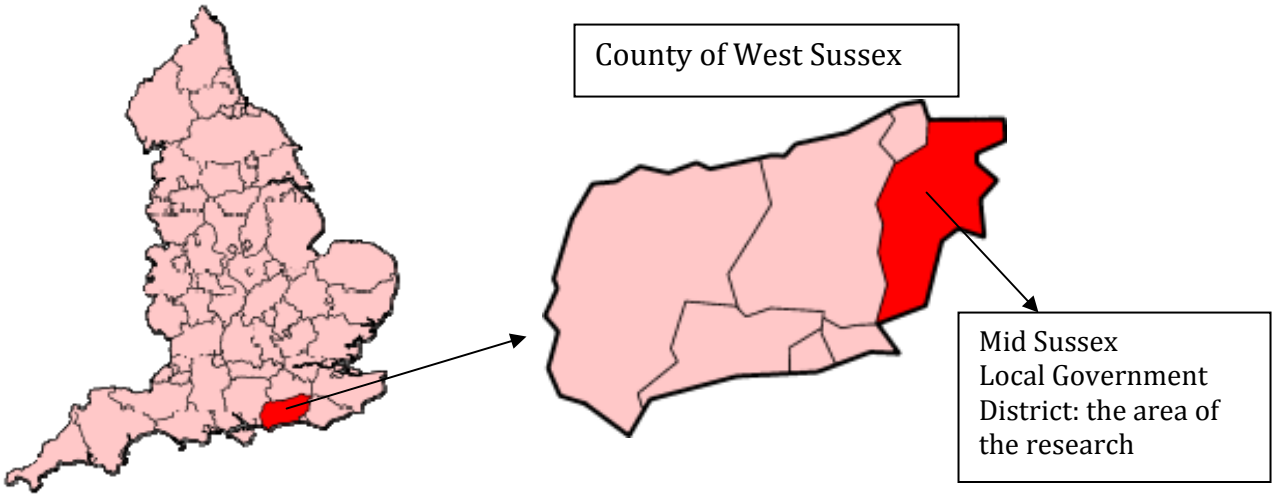


Figure Appendix 3-1 Map of the area of the research, Mid Sussex Local Authority (Wikipedia, wikipedia.org)

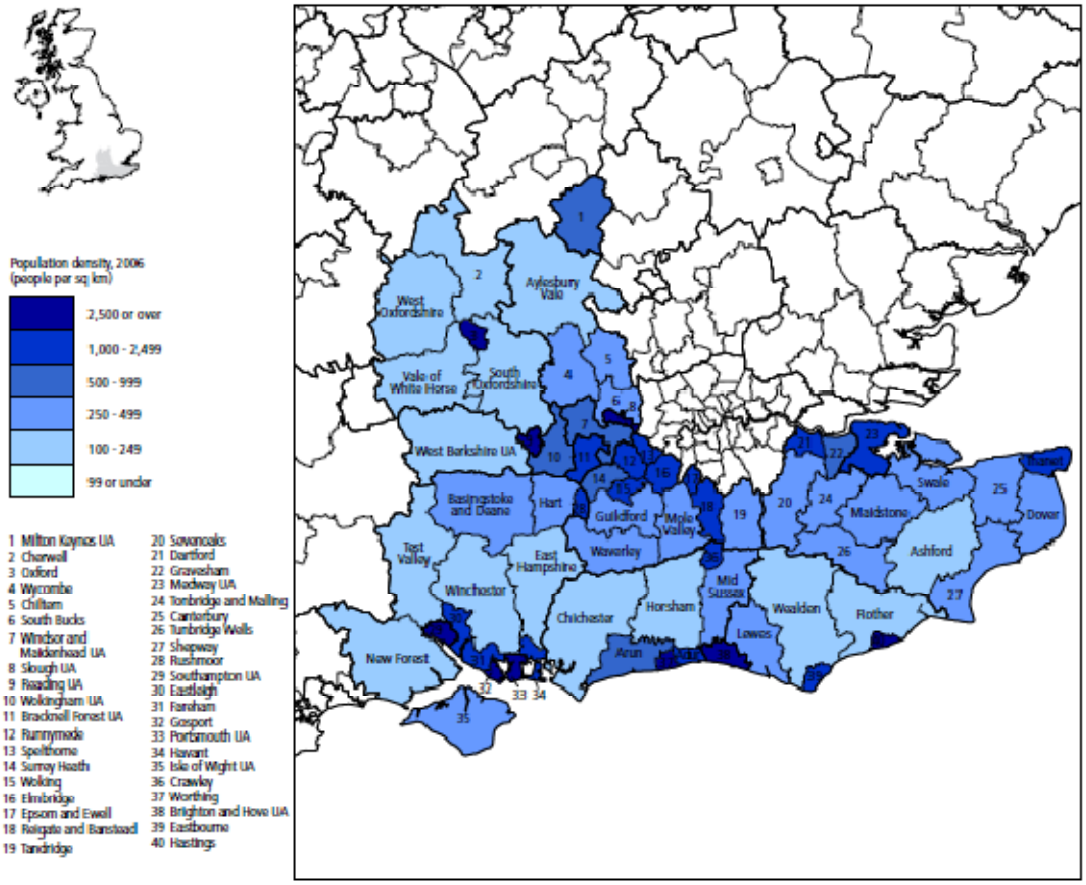


Figure Appendix 3-2 Map of the population density of South East by local or unitary authority, 2006 (Office for National statistics, 2008)

As far as it concerns the socioeconomic characteristics of the Mid Sussex District Council area as summarised on table Appendix 3-1, it can be inferred that people in the district are well qualified and benefit from a prosperous economy and high employment rates. Deprivation is very low and the district scores in the top ten least deprived areas in England (Mid Sussex District council, no date).

Table Appendix 3-1 Socioeconomic characteristics of Mid Sussex District Council area (Mid Sussex District council, no date).

Indicator	District	England	Source
Ethnicity White British	90,2%	84.2%	Office for National statistics 2009
Economic activity rate	84.1%	78.6%	Office for National statistics 2006
Households that own their own homes	80.2%	68.8%	Census, 2001
Employment rate	81.6%	74.3%	Office for National Statistics, 2006
Unemployment rate	3.4%	5.5%	Office for National Statistics, 2006
Occupation group managers and senior officials	19.48% (Largest occupation group of the working population in Mid Sussex)	15.26	Office for National Statistics, 2004
Occupation group Plant and machine operatives	4.61% (Smallest occupation group of the working population in Mid Sussex)	8.42%	Office for National Statistics, 2004
Population qualifications First degree or higher	34.1%	28.6%	ONS annual population survey, 2007
No qualifications	3.6%	13.1%	ONS annual population survey, 2007
Educational achievement (06-07) Pupils that leave school with 5 or more A* to C grades at GCSE/GNVQ	68.9%	60.4%	Department for Children, Schools and Families 2007
Pupils leave school with no passes	1.1%	3.7%	Department for Children, Schools and Families 2007

Ecology and Landscape

Mid Sussex is a predominantly rural District council, and 87.1% is classified as green space (Westaway *et al.*, 2007). The District contains a high quality and attractive environment. Nearly 60% of the District is designated as Areas of Outstanding Natural Beauty (AONB) (figure Appendix 3-3) including the heavily-wooded High Weald, the Low Weald, and the South Downs. Designation as an AONB gives formal recognition to the national importance of the landscape character of these areas aiming to conserve and enhance natural beauty (Mid Sussex District Council, www.midsussex.gov.uk).

The District also contains13 Sites of Special Scientific Interest, 50 Sites of Nature Conservation Importance, 3 Local Nature Reserves, many archaeological sites and historic parks and gardens. The landscape contains significant and varied areas of remaining semi-natural habitat that are of major importance to nature conservation. They include varied woodland types, hedgerows, chalk, neutral and dry acid grassland and meadowland, lowland heathland, standing freshwaters, marsh arable field margins and a variety of urban habitats. Much of the District is in agricultural use, mainly arable land and improved grassland. The woodland cover in the District, particularly in the High Weald is nationally and regionally significant and a major component of the landscape, including ancient woodland areas with continuous woodland cover since at least 1600 AD (Westaway *et al.*, 2007). Attractions in the District are the reservoir at Ardingly, and the arboricultural and botanic gardens at Nymans, Borde Hill and Wakehurst Place (Mid Sussex District Council, www.midsussex.gov.uk).

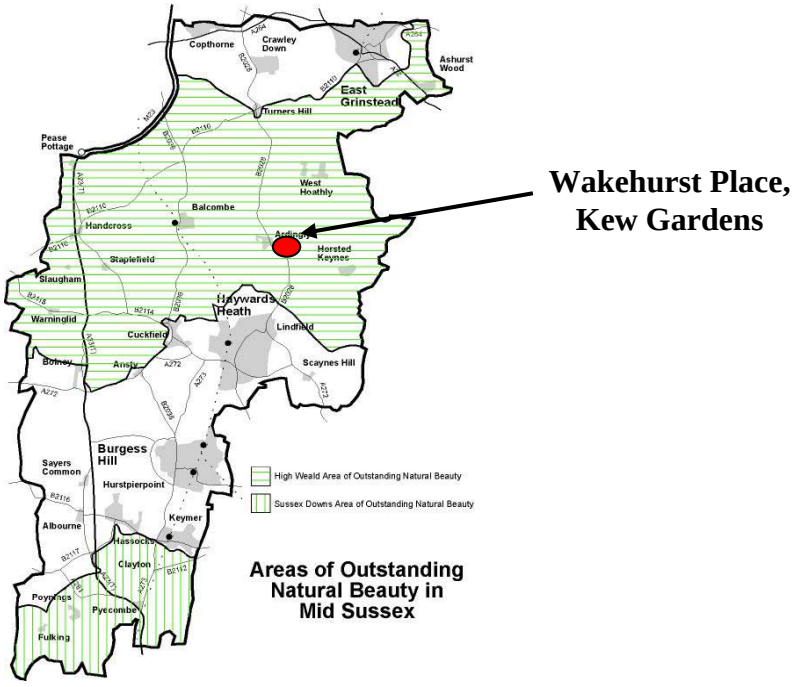


Figure Appendix 3-3 Map of the Areas of Natural Beauty in Mid Sussex (Mid Sussex district council, www.midsussex.gov.uk)

3.3. The schools' local communities and the school settings

Ardingly

Ardingly is a small village with 1833 people living in 627 households (Office for National Statistics, 2001). This area is part of the Area of Outstanding Natural Beauty known as the High Weald Ardingly and has an extremely attractive countryside setting, being surrounded on all sides by high quality landscape. Its elevated position affords extensive views from the village, reaching as far as the Downs to the South. The earliest part of the village contains the church, which dates back to the 14th century, and the original 19th century school. A number of small village shops are located in and around the High Street, serving the day to day needs of local residents. The village has three public houses two of them dating back to also the 17th century, and a restaurant which also offers accommodation, a recreation ground, including an equipped children's play area and playing field facilities and an agricultural showground. A reservoir next to the village has an activity centre for water sports and also a conservation area supporting a variety of birds (Mid Sussex District Council, www.midsussex.gov.uk). The village has a College, well known independent school and a state primary school, Cherry Tree Primary.

Cherry Tree Primary school

Cherry Tree Primary school is a rural co-educational day school, which is situated in the village of Ardingly. The building of the school is a modern building opened in 1987. The original school which is now the Church Centre dates back to 1848. The school facilities comprise of five classrooms with interactive whiteboards, a spacious hall for lunch, assemblies and school events, an Information & Communication Technology suite with 15 computers, a library, an early years' room, a small room for meetings (the adventure room), offices and staff room. Outside the building is a KS1 playground, an asphalt playground marked out for a variety of games and a small vegetable garden, and a separate garden with a wildlife area and pond. For sports the school

also uses the Recreation grounds of the village, situated next to the school (Cherry Tree Primary, website[35]).

The age range of the pupils is from 4-11 years old mixed gender, and the number of pupils on roll for the year of the study (2006-2007) was 120. The school is a smaller than average primary school which predominately serves the local village (table Appendix 3-2). The children are grouped co-educationally according to age on a mixed ability basis. Because of the small number of pupils the classes are often a mixture of year groups. The class sizes are small, usually between 20 and 27 (Cherry Tree Primary website).The number of pupils with learning difficulties is slightly below the national average. The number entitled to free school meals is very low and there are very few pupils from minority ethnic backgrounds. During the research the school was being led by an acting head teacher who was the former senior teacher and it was her first year in the head teacher position (Ofsted, 2006).

Table Appendix 3-2 Pupils' distribution in classes or Class organisation (Cherry Tree Primary records 2006-2007)

Key Stage	1	1	2	2	2
Class	Class 1	Class 2	Class 3	Class 4	Class 5
Year group	Reception/foundation stage & Yr1	Yr1&2	Yr3	Yr4&Yr5	Yr5&Yr6
Actual age of pupils	4,5&6	6&7	8	9&10	10 & 11
Number of pupils	19	26	22	26	27

An Ofsted investigation was carried out the same year of the research (September 2006) which evaluated the effectiveness of the school as good (grade 2). The standards of the school was concluded that have risen and are above average by Year 6 which confirms that the pupils have achieved well during their time at the school (Ofsted, 2006).

National test results at the end of Yr6 indicate that the majority of pupils achieve the expected level for their age and in 2006 nearly half gained levels above this in mathematics and science. The main recommendation for the school improvement was to raise standards in writing. According to the inspection results pupils are working at the levels expected for their age and substantial numbers are working above this. Looking at the 2007 SATs results for Yr6 pupils

[35] For reasons of confidentiality the details of the school's website are not revealed

(table Appendix 3-3) the school achievements are higher than the National average including the writing skills.

Table Appendix 3-3 Primary School (Key Stage 2) achievement and attainment 2007 (DCSF, 2007)

	Pupils eligible for Key Stage 2 assessment					English			Mathematics			Science			Average point score
	total No of pupils	With SEN													
		with statements or supported at School Action Plus		supported at School Action		L4+	L5	A/T	L4+	L5	A/T	L4+	L5	A/T	
LA Average			11.7%		12.5%	82%	37%		77%	32%		90%	47%		28.1
England Average			10.0%		13.4%	80%	34%		77%	32%		88%	46%		27.9
Cherry Tree Primary School	20	1	5.0%	1	5.0%	100%	50%	0%	100%	35%	0%	100%	75%	0%	30.2

While there have been a number of staff changes all teachers plan consistently and are supported very well by their colleagues. The inspectors acknowledged the strength of the teamwork amongst the staff which creates a friendly atmosphere at school and the quality of teaching which is even outstanding in some cases. The range of expertise amongst the small staff ranges from very inexperienced teachers to those who have strong teaching expertise. Nevertheless, there is a consistency through the school with no examples of unsatisfactory practice. The inspection report identified that the personal development of pupils, which has improved since the last inspection, is good and the pupils are very enthusiastic about their school (Ofsted, 2006).

The school curriculum is planned to meet individual needs and a cross curriculum approach is implemented incorporating many different areas of the curriculum with a similar theme. The inspection acknowledged a well balanced and broad curriculum that promotes the basic skills and other opportunities for exciting and relevant subject links. These include the regular science and geography work at Wakehurst Place (Ofsted, 2006). The links of the school with Wakehurst Place are explicitly pointed out in the school's website. Especially in relation to the science curriculum:

> Children are taught the scientific skills of observing, predicting, classifying, experimenting and communicating their findings. We make much use of our school grounds, the school pond and our immediate local environment, visiting Wakehurst Place regularly to enhance our knowledge of the natural world (Cherry Tree Primary website).

In addition, the collaboration with Wakehurst Place is referred to in relation to the educational visits:

> Classes are often taken out of school on a visit to support the work done in the classroom. We are lucky to have Wakehurst Place so close to us. This allows us to use their excellent facilities regularly for environmental studies, science and DT, and Artwork. Parents are asked for voluntary contributions to cover the cost of these valuable activities (Cherry Tree Primary website).

The strong links of the school and the gardens is also shown in the pupils' voice when they are asked to speak about their school:

> 'In our school we go on exciting trips, for example each term we go to Wakehurst Place to learn about plants.'

From the above information it is apparent that the collaboration of the school with Wakehurst Place is inextricably linked with the outdoor education, environmental education and delivering the curriculum. Other outdoor education activities within and out of the school boundaries include visits to the science fair in the local college annually, residential trip every two years at an activity centre for Yr5 &6, a wide range of extracurricular activities including the gardening club. The school's outdoor education within and out of the school is related apart from science also with history, geography and PE. Also every year the school holds an 'enrichment week' to emphasise the importance of creative curriculum including activities in the school grounds and often related to the environment.

Within the aims of the school environmental issues are included 'to foster a caring and respectful attitude towards each other and the environment, encompassing a multicultural society.' And among the strategic intents 'Continue to develop awareness of environmental and health issues and how they affect our lives (school's website)'. The school is an Eco-school, and the Ofsted inspection commented that the school is trying hard towards the Eco-school status (Ofsted, 2006). During the year of the study the school was aiming at achieving the Silver award (the awards are

given on basis of self-report). The school has an established Eco-school council, which meets regularly to discuss how the school can reuse, reduce and recycle. In addition, the school is a Healthy school and the pupils have an understanding of healthy eating as the Ofsted inspection pointed out (Ofsted, 2006).

Lindfield

Lindfield is a village with 6.557 people who leave in 2.831 households (Office for National Statistics, 2004a). Lindfield is classified as an Area of Outstanding Natural Beauty and situated close to both the natural beauty of the High Weald.The focal point of village activities since 1911 has been the King Edward Hall. All Saints Church dates from 1098 and overlooks the village. The Common plays an important part in village life, not only for sport but also central to village celebrations and leisure activities. There is also Pickers' Green, providing pitches for various sports and a children's play area (Mid Sussex District Council, www.midsussex.gov.uk). The village has 5 pubs and the ancient High Street with many individuals shops. Lindfield is regarded as one of the finest villages in Sussex with over forty medieval and post medieval timber-framed houses. At the bottom of the High Street is a natural spring-fed pond with fish, ducks, swans and herons. Close to the village is a Nature reserve and also Ashdown Forest (Lindfield Parish Council website[36]). Lindfield has 2 Primary schools and one secondary school (community college) and one boarding primary school

Elm Tree Primary School

Elm Tree Primary School is a co-educational day school opened in 2000, following the closure of separate infant and junior schools. The school comprises a new Key Stage 2 wing with 8 classrooms, music studio, ICT suite and SEN room. This is linked by a central rotunda to the former infant school which was built in the early 1970's. The Key Stage 1 wing has 6 classrooms, reception, management offices and staff room. All the classrooms are equipped with interactive whiteboards. These are accessed off the William Allen Hall where school events and lunch is taking place and a newly created library and resource centre. The outside area of the school includes a variety of wildlife areas woodland, wetland and meadowland. A pond, nature trail and dig for victory garden also feature in the outside environment used for activities across the curriculum. Early Years, Key Stage 1 and 2 also have their own outdoor learning and play areas. The school shares a playing field with the neighbouring primary school including a pitch for sport provision (Elm Tree Primary school website[37]).

[36] The details of the village website are not revealed for confidentiality reasons
[37] The details of the school website are not revealed for confidentiality reasons

The age range of the pupils is 4-11 years old mixed gender, and the children are grouped co-educationally according to age on a mixed ability basis. The number of children in each class is usually between 28 and 30 and there are two classes in each age group (Foundation stage and Year 1 to Year 6). For the year of the study (2006-2007) the number of pupils on roll was 421. The school is much larger than average and educates children living in the village and surrounding catchment areas. Most children are from White British backgrounds. The proportion of pupils with a statement of educational need has increased significantly and is above average (Ofsted, 2007a).

An Ofsted evaluation was carried out the following year of the research (November 2007) which evaluated the effectiveness of the school as satisfactory (Grade 3). The school has responded satisfactorily to its recent underperformance and standards are improving although the school did not fully meet last year the projected targets in national tests, which may be attributed to the changing nature of the school's intake. A revised curriculum has led to some improvements in developing pupils' skills in English and mathematics. By the end of Year 6, the pupils have attained above-average standards (table Appendix 3-4). Achievement is satisfactory from an above-average start. However, although standards in science are average, they have declined. This is because scientific knowledge and skills are not taught consistently as pupils move up through the school. The decline in science achievement is attributed to the school's staffing difficulties and focus on improving writing and mathematical skills. The Ofsted recommendation for the school improvement included developing pupils' scientific skills providing work that matches the pupils' abilities, and also a whole-school, consistent assessment system (Ofsted, 2007a).

Table Appendix 3-4 Primary school (Key Stage 2) achievement and attainment Tables 2007 (DCSF, 2007)

	Pupils eligible for Key Stage 2 assessment					English			Mathematics			Science			Average point score
	total No of pupils	With SEN													
		with statements or supported at School Action Plus		supported at School Action		L4+	L5	A/T	L4+	L5	A/T	L4+	L5	A/T	
LA Average			11.7%		12.5%	82%	37%		77%	32%		90%	47%		28.1
England Average			10.0%		13.4%	80%	34%		77%	32%		88%	46%		27.9
Elm Tree Primary School	55	2	3.6%	1	1.8%	95%	71%	0%	85%	45%	0%	95%	38%	0%	29.5

The inspection report identified that the pupils' relationships and attitudes to learning are outstanding and pupils were satisfied with their school. Teaching is improving but it is not of a consistently good quality across the school. Pupils' progress is not checked systematically and, consequently, work is not always adapted sufficiently to meet the needs of pupils with different abilities. In the past, priorities for improvement have taken too long to be implemented (Ofsted, 2007a).

The school's policy in relation to science curriculum explains:

> Science and scientific ways of thinking help all of us make sense of the world around us. Children are naturally curious and we encourage this by making lessons as 'hands on' as possible. We bring the enjoyment of science to life (Elm Tree Primary school website).

The Ofsted report did not acknowledge at all the collaboration of Wakehurst Place with the school neither in relation to delivering the science curriculum or any other school activities.

The school trips to Wakehurst Place are described as part of the school's good range of extra curricular activities and enrichment activities:

> Our policy is for our children to experience a range of off-site activities or visiting experts to enrich the curriculum…We further enrich our children's learning through the use of specialist artefacts, visiting speakers, presentations, music, drama and educational visits. Visits range from local trips such as to Oathall Farm, Wakehurst Place, All Saints' Church and our village High Street to the Sealife Centre Brighton, Weald and Downland Museum, British Museum and Imperial War Museum and culminate in a 5 day residential trip during year 6 (Elm Tree Primary school website).

Another activity in collaboration with Wakehurst Place described in the school's website has been Wakehurst contribution to the development of the school grounds by providing trees and helping with their planting in part of the school outdoor environment.

Other outdoor activities within and out of the school boundaries may include participation in the local community such as the village day and bonfire night, the citizenship week and other school trips may include the Bluebell Railway, Drusillas Animal Park as part of their work on Endangered Species or a local river walk. The Ofsted report pointed out the variety of the Extra-curricular clubs are varied and pupils keenly participate in these and sporting activities. There is no club related to the environment or gardening club. According to the Ofsted report 'A good range of extra-curricular activities and enrichment activities promote the pupils learning well, such as Year 1's trip to a wildfowl museum. The excellent outdoor facilities are used well for drama and ecological activities'. Yr1 pupils use the new outdoor learning area in relation to their work on the theme Bugs and Buds' – Local environment, growing plants, mini beasts and habitats. In addition 'The personal, social and health curriculum is good with a strong focus on healthy lifestyles and citizenship. The school has been awarded as a Healthy school. Pupils are increasingly involved in the wider community and contribute well to school life. For example, pupils were consulted about the design of the 'trim trail' and the school council has successfully budgeted and selected playground equipment. In recognition of its work, the school has a British Council International School award, and Eco-school and travel mark awards (Ofsted, 2007a). During the year of the study (2006-2007) the school had already obtained the Silver Eco-school award (on self-reported basis). However the school's website does not provide any special information in relation to the Eco-school activity. Within the school's values there is a short

notice in relation to the environment: ‘We take care of, enjoy and respect our environment’ (Elm Tree Primary school website).

East Grinstead

East Grinstead is one of the oldest towns in the County of West Sussex and its importance as a market, industrial and commercial centre dates back to medieval times. The population of East Grinstead is estimated 26,045 living in 9458 households (Office for National Statistics, 2004b). The town was founded as a borough 770 years ago and it has many historic buildings including the longest row of 14th century timber framed buildings in England located on East Grinstead High Street. The parish church dates back to 1785. East Grinstead has a leisure centre, and other outdoor sports facilities and clubs, a cinema, bowling alley and two night-clubs. The town has a modern public library, an Art Centre with a theatre, a Town museum and a general hospital for the area. The town lies in the middle of the Weald on a hill. Its ancient heart remains unspoilt, ringed by modern housing and surrounded by farms, woodland and the great open space of Ashdown Forest. Places of interest is the Standen House a National Trust property, Weir Wood Reservoir nearby is a site of special scientific interest for ornithology and a sailing and coarse fishing centre (Wikipedia, wikipedia.org). East Grinstead has 8 state primary schools, two secondary schools.

Oak Tree Primary school

Oak Tree Primary school is a town co-educational day school situated in the town of East Grinstead. The school originated in l885 and various additional works have changed the original Victorian building especially from 60’s and onwards. The classes are accommodated in one building, providing seven class bases equipped with interactive whiteboards, hall, junior and infant libraries, two group rooms, offices and a kitchen. Much re-building started in 1988 following a serious fire and the new buildings and landscaping were completed in 1991. The out of school building area includes a reception class outdoor area, a butterfly garden, a quiet garden

with a pond, a meadow with wildflowers, the school playing field with plans to include two allotments and new playground equipment (Oak Tree Primary website[38]).

The age range of the pupils is from 4-11 years old mixed gender and the number of the pupils enrolled in the school the year of the study (2006-2007) was 205. Oak Tree Primary's is an average-sized Catholic primary school which serves the local and surrounding parishes, and also a number of families from other faiths in the local community. The children are grouped in seven mixed ability classes. Class size is restricted to 30 maximum throughout the school, except in cases of exceptional special needs. During the year of the study the number of girls in the school was higher than the boys. Fewer pupils than average have learning difficulties. A small minority of the pupils are from minority ethnic cultures, although there are no pupils for whom English is not their first language. The social and economic circumstances of families are generally very favourable. Both the proportion of pupils with special educational needs and the percentage of pupils known to be eligible for free school meals are below average (Ofsted, 2007b).

According to the Ofsted evaluation of the school in June 2007, the effectiveness was identified as satisfactory (grade 3). Standards are generally above average and this represents satisfactory achievement in relation to pupils' above average starting points. The inspection report identified school's weakness in writing due to not enough opportunities given to pupils to improve their writing skills. It was noted that Standards in the Year 6 tests have drifted downwards since the last inspection, when they were well above average. In 2006, they were only a little above average. However according to the SATs results (table Appendix 3-5) the year of the study the standards have been raised in all the assessed areas something confirmed by teacher assessments during the year of the study. The Ofsted inspectors recommended more regular monitoring of the teaching and learning quality and the pupils progress, a more individual approach to teaching and learning according to each pupils' ability and more focus on raising the writing skills of pupils.

[38] For confidentiality reasons the website details are not revealed.

Table Appendix 3-5 Primary school (Key Stage 2) achievement and attainment 2007 (DCSF, 2007)

	Pupils eligible for Key Stage 2 assessment					English			Mathematics			Science			Average point score
	Total no of pupils	With SEN													
		with statements or supported at School Action Plus		supported at School Action		L4+	L5	A/T	L4+	L5	A/T	L4+	L5	A/T	
LA Average			11.7%		12.5 %	82%	37%		77%	32%		90%	47 %		28.1
England Average			10.0%		13.4 %	80%	34%		77%	32%		88%	46 %		27.9
Oak Tree Primary School	20	1	5.0%	1	5.0%	100 %	50%	0%	100 %	35%	0%	100 %	75 %	0%	30.2

Although much of the teaching is good, there is lack of insufficient monitoring and arresting the drift in standards. Especially able students are not challenged enough and the pace of lessons sometimes is too slow. Too often, work is not matched closely enough to pupils' different abilities. The school has a strong religious ethos (Ofsted, 2007b).

The school's curriculum approach is summarized 'We believe in a balanced approach to the curriculum giving time for each subject area in accordance with National Curriculum recommendations. Our teaching methods offer a balance between a subject approach and a cross-curricular topic approach: class, group and individual teaching/learning situations are all used according to the children's needs and whatever is most appropriate.' In general the core subjects (Maths, English and Science) are usually taught as 'discrete' subjects, although links with the other subjects through cross-curricular topics are sought where appropriate. A linked curriculum is planned for subjects such as history, geography, art, technology, music and English. The Ofsted inspection recognized that the school has been making creative links between subjects, although some of these remain at an early stage and not enough opportunities are taken for pupils to develop extended writing skills across different subjects. Initiatives in 2006-2007 have resulted in

significant changes to the curriculum, increasing pupils' enjoyment and motivation for learning, but the changes are too recent for the school to have evaluated their impact on pupils' achievement (Ofsted, 2007b).

The school's science curriculum is explained: 'the four National Curriculum Attainment Targets for Science – Experimental and Investigative Science, Life Processes and Living Things, Materials and their Properties, Physical Processes – are covered through a series of topics and practical investigational activities in order to develop scientific skills and knowledge involving careful observation, accurate recording, discussion, prediction and evaluation.' Many of the outdoor education activities within and out of the school boundaries are related to the science curriculum and especially to the understanding of the environments. These activities may include investigating habitats or rocks and soils within the school grounds or visiting outdoor education settings for the same purpose such as the local farm (Oak Tree Primary website).

The Ofsted report did not acknowledge at all the collaboration of Wakehurst Place with the school neither in relation to delivering the science curriculum or any other school activities. In addition school information on the internet (the school's website was under construction at the time of the research) did not include any reference on the school collaboration with Wakehurst Place. However the recently launched school website refers to Yr2 visit to Wakehurst Place as part of enriching the science topic on plants and life cycles (Oak Tree Primary website).

Trips to outdoor education settings are linked apart from science also with other subjects such as history, geography and design and technology. Different Year groups visit different places.

> We often take classes on educational visits which support learning in class'.
>
> … History and Geography curriculum is organised through a series of broad themes encompassing specific topics. 'Many aspects of the environment, past and present, are explored. Whenever possible, the school grounds, the immediate local area and special sites within reach of East Grinstead are used, as well as a contrasting geographical area in Britain and another country within the European Community (Oak Tree Primary website).

Other trips to outdoor education settings may include South Downs Planetarium, Florence Nightingale Museum, London, Standen house a National Trust property. Year 6 pupils go on a residential trip at an activities centre in France every year. Also every year one week during the

summer term is devoted to involving the whole school in looking after and participating in activities in the school grounds (the school grounds week).

The school is also participating in the Healthy schools initiative and the Ofsted inspection pointed out that ‘Pupils have a very good awareness of what makes a healthy lifestyle, both in terms of food and exercise, and in taking wider responsibility for 'our carbon footprints'. Older pupils, in particular, have a keen awareness of their contribution to the school community's aim of reducing energy consumption… Pupils' enthusiastic commitment to tackling environmental issues is remarkably strong’ (Ofsted, 2007b).

Oak Tree Primary is an Eco-school and has achieved Silver award status (the award is given on the basis of self report). The school provides on its web-site information in relation to its environmental friendly policy which, as the Ofsted inspection report noticed, has an impact on pupils’ knowledge and attitudes.

> We have a paper recycling scheme operating throughout the school with collecting boxes in each classroom for used paper. Two water butts have also been installed to store rainwater for watering the plants. We also have three compost bins for recycling organic waste. Inside the school teachers and pupils are trying to save energy by turning off lights when leaving rooms and double-sided photocopying is encouraged when possible. The Governors are looking into other energy efficiency devices such as radiator thermostats and door insulation…Children's representatives on the eco-committee have made recommendations regarding ways to reduce energy use and improve recycling at home as well as at school, many of which have been introduced. There is now a regular eco-news letter, giving advice and information, an eco board and a group of volunteers pick up litter weekly.’ The school has an Eco-code which lists a number of environmental friendly activities taken on board and the school’ religious ethos is related to the school’s environmental policy as well. ‘Oak Tree Primary is committed to caring for God’s creation by doing all we can to look after our environment (Oak Tree Primary website).

Following up the descriptions of the three schools of my research it should be noted that the level of links between the collaboration of the schools and Wakehurst Place with the outdoor education, environmental education and the curriculum vary from school to school. The variety indicates also differences in the strength of the collaboration cases; this variety enriches the research data and will enable some useful comparisons between the cases.

3.4 Wakehurst Place, Kew Gardens

The role and the work of the gardens

Royal Botanic Gardens, Kew is acknowledged as one of the most important Botanic Gardens in the world and one of the world's leading plant species conservation centres. It is indicative that Kew gardens was inscribed on the list of World heritage Sites by UNESCO in 2003. The inscription recognised the importance of Kew's contributions to botanical and environmental science since 1759, together with its unique collection of plants from all over the world, and its international influence on the history of landscape and garden design. It should be noted that under statute the UK Government has a primary role in ensuring that the Royal Botanic Gardens, Kew is adequately resourced to fulfil its mission.

Kew Gardens' mission is to 'inspire and deliver science-based plant conservation worldwide enhancing the quality of life' (Royal Botanic Gardens, Kew, www.kew.org). Kew is fulfilling its mission through a range of activities such as:

- developing the global reference collections and making them more accessible to the greatest possible variety and number of users;
- undertaking world-wide research into systematics, economic and ethnobotany, biological interactions, conservation and horticulture;
- supporting the conservation and sustainable use of plant resources in the UK and overseas;
- informing the wider public about Kew activities, through the maintenance and development of world-class Gardens that provide a window into Kew work;
- providing education, advice and information in various forms to all stakeholders, and building the global capacity for studying and conserving plant diversity through collaborative partnerships and by training scientists from developing countries (Royal Botanic Gardens, Kew, www.kew.org).

Garden features

Kew being royal gardens initially, was established as a botanic garden in 1759 and is situated on the south bank of the River Thames near Richmond, about 10 km south-west of London. Kew gardens was expanded in 1967 by taking on lease Wakehurst Place a National Trust property which is characteristically known as Kew's 'country garden'. Wakehurst Place is located between Turners Hill and Ardingly, near Haywards Heath in West Sussex in an area which is part of the High Weald of Sussex (Area of outstanding beauty) and is an outstanding botanic garden and conservation area. Wakehurst Place having a mild climate, a high rainfall and moisture-retentive soils, complement the conditions at Kew and allow many important groups of plants, unable to be grown successfully at Kew, to flourish there ((Royal Botanic Gardens, Kew, www.kew.org)).
The estate of Wakehurst Place covers 188 hectares (465 acres) (see figure Appendix 3-4). The visitor centre is the entrance to Wakehurst Place and also contains a gift shop, a plant sales area, a coffee shop and a small exhibition area. The mansion of Wakehurst Place was originally built in Ardingly sandstone in 1590 and since then it had changed owners with respective changes in the mansion and the gardens. Today it includes rooms for the learning programme, offices, an exhibition area and a small area preserved as it was from the last private owners of Wakehurst Place. Next to the Mansion are the Stables, the gardens restaurant and also other buildings containing administration offices and the nursery (Griggs *et al.,* 2002).

Although Wakehurst Place mansion has been built over 400 years ago, the gardens started to take their present shape being developed from 1903 by Gerald Loder (later Lord Wakehurst). A major attraction at Wakehurst Place is the range of rarely seen plants from South America and Australasia. There are also four National Collections within the grounds – birches, southern beeches, skimmias and hypericums (Griggs *et al.,* 2002).

The Garden Zone covers the area nearest to the Mansion and includes the Sir Henry Price and the Pleasaunce walled gardens, the Winter Garden, Spring Border, Southern Hemisphere Garden, The Slips and Water Gardens, Specimen Beds and Mansion Pond, the Tony Schilling Asian Heath Garden and the compost corner where the gardens waste materials are being recycled (Royal Botanic Gardens, Kew, www.kew.org).

The Millennium Seed Bank Project located in a specially designed building opened in 2000 and aims to safeguard over 24.000 plant species from around the globe against extinction. It has

already successfully assured the future of 95% of the UK's native flowering plants. As well as providing space to store thousands of seed samples in a large underground vault, the building includes advanced seed research and processing facilities and a state of the art exhibition about seed conservation. In addition visitors can watch seed research and conservation in action in the laboratories through glass walls. In front of the building eight raised parterre beds contain plants from various habitats under threat in the UK from shingle beach to hill and mountains (informationsheet_MSB001_ Kew's Millennium Seed Bank, 2005).

The ex situ conservation undergoing through the work of the Millennium Seed Bank is complemented by the in situ conservation through the maintenance of living plant collections especially in the Conservation Zone. At Wakehurst Place the 15.000 different types of plant contain five species that are totally extinct in the wild and 300 more included in lists of threatened and endangered species. Much of Wakehurst Place is a Site of Special Scientific Interest (SSSI), designated as such for the valuable communities of filmy ferns, mosses, liverworts on lichens, (cryptogams). The Francis Rose Reserve, is dedicated to these cryptogams. Within the public grounds, 'conservation' also embraces the Pinetum, Westwood Valley including the Rock walk, the Himalayan Glade, Westwood Lake and the Wetland Conservation Area. At Wakehurst Place the typically Wealden geography with steep-sided ghylls and its combination of woodland, wetland and meadow makes it an important conservation area in south-east England. Preserving these natural features the Wetland conservation area and the Loder Valley Nature reserve offer a home for a rich diversity of native plants and animals. The Loder Valley reserve includes branch of the Ardingly reservoir and in order to prevent excessive disturbance access is generally limited to 50 people a day. At the back of the meadow in the Westwood Valley Conservation Zone is the SEEBOARD Field Study Centre designed for school parties and other students. Ecological study is combined with the opportunity to see active conservation management on site (Griggs *et al.,* 2002).

The last extensive area of Wakehurst Place is the Woodland Zone. For over 150 years Wakehurst Place evolved by combining ornamental plantings and exotic tree collections within native woodland, which consists in the main of English pedunculate oak. The Great Storm of 1987 laid low thousands of fine specimens which paved the way for a series of tree collections which would be scientifically important more attractive to visitors and more relevant to Kew's emphasis on conservation and education (Griggs *et al*., 2002). Today, Westwood Valley is visited for trees from eastern Asia, Horsebridge Wood for North American species, Bloomer's Valley for

Mediterranean and Irano-turanian species, Coates Wood for Southern Hemisphere trees and Bethlehem Wood for the birches which are found all round northern temperate zones (Royal Botanic Gardens, Kew, www.kew.org).

Figure Appendix 3-4 Map of Wakehurst Place, Kew gardens (Kew at Wakehurst Newsletter, 2009)

The learning programme

Since the focus of the research is the collaboration between the gardens and the schools it is purposive to refer to the educational policy of Kew gardens and especially the educational activities offered at Wakehurst Place narrowing down to the activities offered to primary schools.

The educational role of the Royal Botanic Gardens, Kew is to 'increase public knowledge and understanding of the value and vital importance of plants and to increase recognition of, and support for, the gardens work' (Royal Botanic Gardens, Kew, www.kew.org).

The main objectives that support the educational aim of the gardens are:

- To share the garden's knowledge effectively on as wide a front as possible.
- To establish the Royal Botanic Gardens, Kew as a world leader in the interpretation and teaching of systematic botany, conservation, biodiversity assessment and management, herbarium and botanic garden management, economic botany, and horticulture.
- To assist actively in capacity-building in biodiversity and related sciences.

To network effectively with leading universities, colleges, schools and other botanical/horticultural institutions to develop relevant plant science education (Royal Botanic Gardens, Kew, www.kew.org).

The educational facilities supporting the educational work at Wakehurst include the outside whole gardens area (the outdoor classroom) and indoor classrooms which vary from the field study centre to the mansion rooms (the chapel, the library, the billiard room) including the science zone (laboratories) and also the nursery and the millennium seedbank. Additional supporting indoor facilities to the educational work are the learning programme offices and the resource room in the mansion and also the visitor centre (Royal Botanic Gardens, Kew, www.kew.org).

At Wakehurst Place the educational role and objectives are fulfilled through a variety of activities for different groups of the public including:

- Higher Education & Training

International Diploma Courses, MSc Partnerships, PhD projects, Fellowships & Internships, Apprenticeship and Traineeships in Horticulture

- Schools Education

Schools activities, visit planning, resources and teacher training

- Public Education

Courses and study days, guided tours, trails, events (including community events) and exhibitions for adults, families (Sunday and half term activities) and other groups

- Resources

Information sheets, trails, leaflets, teachers' packs and other resources

- Capacity building

Short training courses, technical support and sustained long-term partnerships to enhance capacity worldwide in plant diversity, science, collections, conservation, environmental sustainability, horticulture and education (Royal Botanic Gardens, Kew, www.kew.org).

The range and the importance of the educational work at both Wakehurst Place and Kew Gardens is reflected on the recent work developing resources suitable for teaching plant science to top GCSE and A-level science students in schools and colleges. A recent research pointed out a decline in both the teaching and study of plant science and conservation by teachers and students, because teachers find these topics hard to teach and students find them uninteresting and challenging to learn. ‘Our aim is to dedicate time and resources to breaking down these barriers through the development of high quality material’, says the Head of Learning at Wakehurst. ‘It is important to make full use of the cutting-edge science that goes on at Kew and Wakehurst and, through collaboration with SAPS, developing experimental procedures that can be taught in school science labs using equipment and resources available to teachers’ (Royal Botanic Gardens, Kew, www.kew.org).

The value of the learning programme of Wakehurst Place is enhanced with the flourishing relationships they maintain by supporting the work of other organizations such as the ‘Science and Plants in Schools’, Botanic Gardens Education Network, ‘Sussex Environmental Educators Forum’, ‘The Association for Science Education (ASE)’, BA (British Association for the Advancement of Science), West Sussex County Council (Royal Botanic Gardens, Kew, www.kew.org).

As far as it concerns the school education the main activities offered are the assisted school visits which are tailored to meet the specifications of each particular school stage from foundation/reception years and Key stage 1-4 to Sixth. Since the research investigated the collaboration of primary schools with Wakehurst Place and school visits have a leading role in

these collaborations the following is the list of activities available to primary (table Appendix 3-6) (Royal Botanic Gardens, Kew, www.kew.org).

Table Appendix 3-6 Activities for pupils offered at Wakehurst Place (Royal Botanic Gardens, Kew, www.kew.org)

Foundation Stage (Preschool and nursery)
The Green Fairy quest around the garden; a tailor-made variety of fun activities to stimulate children's awareness of nature
Key Stage 1 and 2 activities
Parts of a plant • Plant eater workshop – which part of a plant do you eat • 'Imagine a world without plants' – life on Earth depends on plants • Saving seeds for the future – the work of the Millennium Seed Bank in caring for seeds in danger, seed bank trail and discovery boxes on the amazing uses of seeds • Meet a tree • Story of a sunflower • Starting out – germination • Plant it, grow it, eat it – from seed to sandwich • Growing up – helping plants to grow well • Making more – flower structure and reproduction • Leaving home – dispersal of fruits and seeds • Meet the gardeners
Habitats (woodland, grassland and wetland) • A place to grow – measure the environmental factors which affect plant growth • Simple soil experiments. • Rainforest workshop – how plants are adapted , products of the rainforest • How plants adapt – use the raised beds at the Millennium Seed Bank to look at how remarkable plants are in the way they exploit different and sometimes harsh habitats • Minibeasts – hunt in the long grass, trees and leaf litter • Find, observe and sort animals into groups then build a food chain • Pond dipping – in small groups in a secure environment • From tree to fuel – the story of charcoal • Recycling and compost making • Food miles – how far has your food travelled?

Trails • Using our senses • Maths and measuring • Solve the great Wakehurst Place mystery • Parts of a plant trail • Healthy plants trail • Amazing plants trail • Seed trail • Recycling trail • Orienteering trail • Rocks at Wakehurst Place trail • Habitat trail
Get creative • Printing, collage, 2D and 3D ephemeral art, mask and crown making using natural materials. • Drawing using a variety of materials including charcoal. • Create fantastic plants • Banner making • Storm in the rainforest – a musical activity using traditional instruments made from natural materials. • Environmental games • Story sticks • Create individual or group poems about trees using descriptive words. • Create the life story of a tree • Make a tree in sounds and actions • Tree mythologies

Also in conjunction with West Sussex County Council – Wakehurst Place offers a range of activities on Saturdays for gifted and talented pupils including. A visit can be tailor-made to suit the needs of students, through a free planning meeting between the teacher and the educator who discuss the following issues:

- Selection of modules and assignments
- party and group size – organisation and timetabling
- equipment and resources required
- levels of support from Wakehurst staff and volunteers
- location(s) and trail routes(s)
- use of the Study Centre and Mansion
- suitable clothing
- provision required for any student with special needs
- health and safety issues both general and in relation to selected modules
- risk assessments are available on pre visit planning meetings (Royal Botanic Gardens, Kew, www.kew.org)

A typical day during a school visit has many practical elements to be described with apart from its educational content. Depending on the age of the students and the topics to be covered, schools can have a half day (of 2½ hours) or a one day visit lasting between 10.00am and 2.30-3.00pm. Groups range from individual classes of approximately 30 to whole year groups of 120. The children are split into easily managed groups and take part in different activities usually following a rotational timetable of three activities in a day. One of these is often a volunteer led trail which aims to complement the other activities. Activities are usually around 45 minutes plus time allowed to move to the location of the next activity. In case it rains for younger children all programmes have indoor back up activities. For older students, the programme happens outside wherever possible, but there is usually flexibility for rearranging the timing or location of the different sessions to avoid the worst of the weather. Lunchtime location is usually outside (the paddock), and during lunch time the school teacher becomes responsible for the pupils supervision. In addition for health and safety reasons the pupils should be supervised by a specific number of adults provided from the school according to the size of the group. The price of a school visit which covers the teachers expenses for assisting the visit (planning meeting is free and also entry to the gardens is free) vary according to the number of the children and the duration of the visit. Also there is an option for the schools to have an unassisted visit where groups in full education can enter the gardens free of charge and have a day organized and implemented by the school teachers (Royal Botanic Gardens, Kew, www.kew.org).

Other educational provisions for primary schools at Wakehurst Place include Continual Professional Development and Teacher Training. Themed days such as one day courses Plant it, grow it, cook it, eat it offered for the primary school teachers. The charge for attending the course offers the opportunity for the teacher to bring a TA free of charge. Also INSET days for teachers can be arranged providing training for staff of a whole school (Royal Botanic Gardens, Kew, www.kew.org).

4. Development of Wakehurst learning programme

In the late 1990s by securing funds for an education officer it was recognised that education should be integrated into Kew Gardens' overall costs, and that was the beginning of Wakehurst learning programme. For the establishment and expansion of the education team Wakehurst adopted a model that had been first developed at Kew gardens in London. Kew gardens advertised through the local authorities posts for teachers who would be trained in plant science, assessed for their level of knowledge, and then employed by Kew on a contract base according to the schools demands. Especially as the education officer at Kew had a taxonomist background, and felt constrained by what she could do, the model of training and employing teachers was perceived as the appropriate step for the future of the garden's education. Working together, the educator at Kew and the educator at Wakehurst, applied the same strategy to build the education team in each setting. Wakehurst educational programme started to develop initially by targeting the schools back in 1993, and until 2000 they had developed the programme in relation to the National curriculum. From 2000 onwards the number of children coming into the gardens as part of the general public increased, indicating that the pupils after the school visit would come back to the gardens with their families. Also from 2002 volunteers were recruited to help the educational programme, because the school numbers were growing and the preparation work was more demanding bringing pressure on the teachers. In the beginning it was only Jean T. (the first educator employed and later head of the learning programme) on pay role and the teachers were brought in with a day contract covered by the money paid from the schools and subsidised by the budget of the learning programme. In 2002 as a result of management reorganising across Kew, Wakehurst Place learning programme became more independent getting the opportunity to expand according to the setting's strengths and special conditions, not having to align with Kew in London, whose setting and volume of visitors were substantially different. In terms of numbers, in 2005 Wakehurst was the most visited National Trust property (420.000 visitors). The head of Wakehurst learning programme described education in terms of numbers:

> Education is regarded as a very strong feature at Wakehurst Place, and in 2005 15.000 people took part in educational activities of whom 9000 were children going through the school programme. The rest would have been adults and family groups (Meeting with Jean T., 31/3/2006).

The learning programme in 2006 numbered 11 educators on contract basis, 39 volunteers, two part time administration officers, one fulltime research and development education officer for

Kew and SAPS (Science and Plants for Schools) who focused on secondary education, and one full time education officer based at Wakehurst to develop activities for the general public visiting National Trust Properties. Apart from the expansion in terms of staff, the learning programme expanded in terms of facilities and resources, making use of the biggest part of the Wakehurst Mansion which could be described as the head quarters of the learning programme.

As the learning programme grows, its collaboration with other departments of the gardens e.g. nursery, the Seed Bank, the arboretum unit is rising. Over the years the learning programme is gaining slowly the recognition from other departments of the gardens, especially due to organising big events, such as the National Lottery and the Big Draw, which increase significantly the gardens' visitors.

The development of the learning programme has been acknowledged especially after 2000 in terms of facilities, staff expertise, and the structure of the programme including organising the timetable and the way the activities are delivered, whose content is adjusted to the national curriculum levels, from the foundation stage, throughout the Key stages up to GCSE and A level.

The learning programme started by developing activities focusing on plant's life and conservation because of the Head of the learning programme background and personal drive. 'Over a period of time the focus of the activities broadened out the way that we make it accessible, like for example learning about conservation by doing art' (Meeting with Jean T., 31/3/2006). The educational programme contributes to the needs of the schools especially in relation to the National Curriculum even when the pupils/students visit the gardens as general public. For example during Easter holidays the gardens offer revision activities for the KS2 and KS3 pupils and students who are preparing for the forthcoming National tests.

One of the basic concepts behind the learning programme as Jean T. explained to me is building an interest and desire to understand plants by discovery:

> The impact of the learning programme comes not only by ticking the boxes that the National Curriculum targets were met, but also by creating a relationship with Wakehurst, and an understanding, an insight. By touching people and getting them emotionally, that will bring the change. However that is something very hard to measure … What we need to do is trigger the desire. Don't think that you've got to teach everything and actually you may fail. And you may even bring negative learning, because they think 'ohhh'. Because we all know how advertising works. You want it. If you want it, you drive yourself much

> more … And if you think about your childhood, there must have been something that really made an impact on you as a child; you didn't know what your course was going to be, but now you look back and you think, oh yeah you know it was that trip to the farm, or it was that experience of going, or smell, or something like that…so if we get that right, its like the investment that is very hard to measure (Meeting with Jean T., 31/3/2006).

The head of the learning programme explained to me how new activities are developed nowadays. She may initiate an activity but then she will pass on her ideas to an educator to complete it, and discuss it at a later stage. Since she has moved up to the management sector she has a distance from practice so the educators are more appropriate to adjust her ideas, and develop them into activities according to the school needs. In addition, Jean T. has the role of keeping the focus of the learning programme, not only thinking at the context of the National curriculum but contributing to the fulfilment of the Convention on Biological Diversity; combining the schools perspectives with the Kew mission statement.

The educators on the other hand commented that developing new activities is 'a bit ad hoc', mainly because of the system that the educators are employed.

> We are employed on a daily basis; if you want to develop something you do it on your own time, unless you ask some pay for it, and it depends on how committed the teachers are to develop things. All the teachers that have come recently, well there's so much stuff there…there's no reason really for them to develop any new material…I have loads of ideas and things I would like to develop, but I just haven't got the time to do them, and I know nobody else would do them, and it's a bit of a shame really (Interview with Michelle, 18/5/2007).

By employing professional teachers as educators, the learning programme can fulfil better the schools needs, especially as some of the teachers (who are usually retired) have a long and rich experience in education. The educators' role as an expert has been highlighted in many occasions, particularly because of the schools expectations. However as the learning programme is rapidly expanding, concern has been raised for providing adequate training especially for the primary trained teachers who may be very good teachers in terms of pedagogy but lack in knowledge of the subject matter.

> Because of the need for expansion and development of the learning programme in a way it has been left headless, and more training is needed and attention that messages in relation to plants conservation are put across (Interview with Michelle, 18/5/2007).

Working closely with the schools is a policy that the learning programme has adopted to ensure that the activities delivered will meet their expectations, and also, that relationship benefits other educational work such as families' activities. In the following excerpt the head of the learning programme explained to me the benefits of collaborating with the schools.

> Jean T.: if you don't collaborate with schools it is very easy to get to the stage where you are telling people what you think they need… there has to be a dialogue. And I think that what we get from that dialogue is a very clear idea of what their needs are, what their drivers are, what will work for them and how that then integrates with what we are doing or we are trying to do, so we get a sense of making it better for the teaching, but also it makes us put a lot more effort and a greater degree of thinking into what we are doing here. For example, the activity of what we do with the community has grown from what we do with the schools. I always feel that there is an exchange when I work for a school; this will generate ideas for the things I will try with the public and vice versa (Meeting with Jean T., 31/3/2006).

It can be said that Wakehurst learning programme has expanded in a holistic way, not only by targeting schools but through schools, reaching the students' families and wider audiences. In the next part I will focus more on the relationship of Wakehurst learning programme with the schools of my research, and how it developed over the years.

5. Memorandum of Understanding (MoU)

Dr ……..
Head of Department

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July 2006

Memorandum of Understanding (MoU)

The purpose of this document is to set out guidelines as to roles and responsibilities of all participants in the PhD research carried out by *Asimina Vergou* of the University of Bath in Wakehurst Place and local schools.

The research

This research aims to fill gaps in environmental education research concerning the relationship between indoor learning and outdoor learning, to enhance our understanding of the educational role of, and practice within, botanical gardens, and make suggestions for future policy regarding outdoor education. The research will attempt to identify the effects of the learning activities on pupils, teachers and botanic garden educators and also identify the factors that influence the collaboration of schools with Wakehurst Place and those that influence learning during the collaboration.

The research will be conducted in Wakehurst Place and three local primary schools. This garden is part of the Royal Botanical Gardens, Kew, which has a long history and an international significance as a botanical garden, and the garden's educational programme is well established with strong professional relationships with local schools.

Methodology and method

The research will take place during the following school year 2006-2007 and will focus on the already established collaboration of Wakehurst place with the schools. Approaches used will include the following:

- Document analysis and follow-up interviews to establish the educational and management contexts of Wakehurst Place and the schools, to include an examination of past work in relation to outdoor learning
- Observation of the educational activities that take place during the collaboration of schools with Wakehurst Place, including schools' preparation for the activities, and their de-briefing of what happened
- Interviews with teachers and garden educators after the implementation of the activities, and focus group interviews with pupils reflecting on their experiences in the garden.

A *review group* will be formed of school teachers, botanical gardens educators and the researcher which will meet from time to time to review the research and aid its progress.

Research beneficiaries

The University aims to ensure that the research is an enjoyable, stimulating and worthwhile learning experience for all involved, and that the institutions and their staff and students gain from taking part in this research.

Role of the researcher

The researcher will be CRB checked, and will aim to act professionally and appropriately at all times, and to work within British Educational Research Association ethical guidelines. All personalised data will be kept secure and held in confidence, and no school, teacher or child will be identified by name in the thesis or any dissemination arising from it. Permission of children's parents / carers will be sought before they are involved. No photographs of children will be published by the researcher or University, and any digital images created during the research will be destroyed when it is finished.

Role of institutions

The schools and Wakehurst Place will allow appropriate and reasonable access to staff, children, teaching activities, sites, meetings and documents that fall within the remit of the research.

Resources

Neither Wakehurst Place nor the schools directly involved will be expected to contribute financially to the research, save through a reasonable allocation of staff time, and the use of available premises for meetings, data-gathering, etc. Any equipment and other resource needed for the research will be provided by the University.

……

William Scott

William Scott
Centre for Research in Education and the Environment, University of Bath

6. Letter from the head teacher to the parents, to request consent

Cherry Tree Primary
Head teacher: Mrs Erica P.
xxxxxxxxxxxx
Ardingly
West Sussex
xxxxxxxxxx
Tel: xxxxxxx
Fax: xxxxxxxxx
e-mail: xxxxxxxxx

2/3/2007

Dear Parents,

I would like to introduce you to research currently being conducted at Wakehurst Place. Miss Asimina Vergou is conducting her PhD research based at the University of Bath) focusing on the learning opportunities for students, teachers and Botanic gardens educators through the collaboration of schools with Wakehurst Place. I am writing not only to inform you about this research which is going to take place at school and at Wakehurst Place, but also to ask your permission for your child to be part of it.

Because of the established collaboration between our school and Wakehurst Place, we have agreed to take part in this research. In order to investigate the above topic the researcher will observe the school's visits to the Garden during 2006/07 and also related activities in the class before and/or after the visits. Also, in order to find out the learning outcomes, Miss Vergou will conduct interviews with groups of 6 children, and separately with teachers and Wakehurst Place educators. The children's interviews may last approximately 45 minutes each, and be held in the school.

Wakehurst Place and the three local schools that are involved (Cherry Tree Primary school, Oak Tree Primary school and Elm Tree Primary school) have already discussed this research in detail with Miss Vergou and her supervisor Professor William Scott, and have agreed a memorandum of understanding between the schools and the University for conducting the research. The researcher is working within the British Educational Research Association's ethical guidelines. All personalised data will be kept secure and held in confidence, and no school, teacher or child will be identified by name in the thesis or any publications arising from it. No photographs of children will be publicly displayed or published by the researcher or University, and any digital images created during the research will be destroyed when it is finished. As the research includes working with children, Miss Vergou has been checked for Criminal Records and a copy of the clear disclosure is kept at school.

Lastly, I would like to mention that the research, apart from addressing gaps in our knowledge, will contribute to enhancing the educational practice of both our school and Wakehurst Place. We think that the current research provides a good opportunity for schools to gain evidence

about the contributions to students' learning during our collaboration with the garden, and the potential impact that garden visits may have on learners. Furthermore, the research may come up with recommendations which will enhance the experiences of all our pupils.

Any suggestions, comments or queries will be welcomed; please let me know if you have any objections to the above process. If you would be willing for your child to take part in this project, please sign the form below and return it as soon as possible.

Thank you for your co-operation,

Yours faithfully,

The Head teacher

.....

Consent note from the parents (to be returned to the school)

Date .../3/2007

I give my permission for my child (name)..... to participate in the research of Miss Asimina Vergou on the learning opportunities that take place for pupils, teachers and Botanic gardens educators through the collaboration of schools with Wakehurst Place, during 2006/2007.

Name of the parent:.....

Signature:.....

7. Data collection methods, interview questions

These are the questions I had planned initially as a guide for semi-structured interviews with my research participants. As the fieldwork progressed the interviews became unstructured and more open.

7.1. Interview questions with pupils Yr3 – Yr6

WAKEHURST PLACE AND CHERRY TREE PRIMARY RELATIONSHIP

1.What do you do at Wakehurst Place?

2.What do you think of botanic gardens? What do you think of Wakehurst Place? How do you feel about Wakehurst Place? 'Why do you think that?

3.Can you describe how your school works with Wakehurst Place?

4..What do you think of coming at Wakehurst Place? Would you like to visit a different place every year? Why? Where?

LINKS OF ACTIVITES AT WAKEHURST AND THE SCHOOLWORK

5.Did you do any activities in the classroom linked to what you did at Wakehurst before the visit? Do you think they helped you learn more easy or to remember your visit more? What did you learn from this?

6.Did you do any activities in the classroom linked to what you did at Wakehurst after the visit? What did you learn from this?

7.Did you do anything at Wakehurst Place that helped you with what you did at school? What was this and how did it help?

LEARNING AT WAKEHURST PLACE

8.Is learning at Wakehurst different from learning at school? Why? Is there anything at Wakehurst that helps you learn? What is it?

9.Do you think coming to Wakehurst more than once a year affects your learning when you visit the place? In what ways?

10.What kind of things do you remember doing at Wakehurst last time you visited the gardens? What do you think you learned from these at the time? Which of these did you follow up afterwards in your work at school?

11.Did you learn anything new during this visit at Wakehurst Place?

What were you thinking?

What were you doing?

How were you feeling?

Pick up one photo and discuss with the person next to you what were you doing at the photo and if you learned anything new. You can talk about your feelings, the activity or things you were thinking about. ?

12. Did you had any similar ideas, knowledge to what you learned at Wakehurst, before? Did they help you to learn the new things? In what ways?

13.Are the new things you learned at Wakehurst related to your everyday life? In what ways?

14.What have you enjoyed about your visit to the garden? Why? Was there anything you did not enjoy/like? Please explain.

15.What did you find more interesting? What did you find less interesting

ENVIRONMENTAL ISSUES

Knowledge

16.What are some of the things you learned about caring for the environment/nature/plants and animals, the world around us during your visit? Where were you and how did you learn these things?

Attitudes

17.Have you changed the way you feel about the environment as a result of your visit? If so, how have you changed?

Was there a particular part of the visit that made you change how you feel? Where was it?

Behavioural intentions

18.Do you think what you learned from your visit will change what you do for the environment? If yes what do you think you will do

RECOMMENDATIONS FOR THE FUTURE

18. Is there something you would like to change from your last visit?

19.What would you like to do/learn the next time you visit Wakehurst Place with your school.

7.2. Interview activities and questions for Yr1&Yr2 pupils

Regarding the previous visit to Wakehurst

Activity No1

Pick one photo from the last visit that reminds you something that you learned during your previous visit and discuss with the person next to you what were you doing in the picture, what did you learn.

Discussion with everybody after 3-5minutes about their previous experience to Wakehurst

Questions:

What do you think about botanic gardens? What do you think about Wakehurst Place? How do you feel about Wakehurst Place?

Activity no2

Role play using puppets for mother, father, boy, girl

As Mark told me when I asked him about pupils learning and if pupils tell him anything about the visit he explained that as he was at the visit the children probably will not tell him anything about the visit but they will tell their parents as their parents will not be at the visit. That's why I intend to use children and father and mother puppets for the role play.

Example:

These are your parents and imagine you are coming home after the visit

What would you tell to your parents about the visit?

Tell me more, what did you do at Wakehurst

And then your mum would ask you:

So did you lean anything new this time at Wakehurst?

What were you thinking? What were you doing, How did you feel?

(the pupil will use the puppet to answer)

Other questions that the parents will ask:

Did you do any activities in the classroom linked to what you did at Wakehurst before the visit? ?

Do you think they helped you learn more easy or to remember your visit more? What did you learn from this?

Draw a picture of the thing you remember most.

Did you do any activities in the classroom linked to what you did at Wakehurst after the visit? What did you gain from this?

What would you like to do next time you go to Wakehurst?

Activity no3

Objects from the activity

I will use the resources used during the visit to initiate talking

Have you seen this ……before? Could you describe to me what you were doing? Did you learn something new?/What did you find out?

Activity no4

I will use a duck puppet to ask them the last set of questions about environmental issues

Do you remember any animals you met at Wakehurst? (pupils will definitely mention the ducks) so we have Mr Duck here with us who would like to ask you some things about your visit.

Now Mr duck is very much interested if last time you came to Wakehurst you learned anything about caring for the animals and the plants and the world around us? What did you learned?

Mr Duck would also like to ask you if you have changed how you feel about the plants and the animals as a result of your visit? If so, how have you changed?

Do you think that after this visit you may change what you do for the environment?

7.3. Interview questions for teachers

BACKGROUND OF THE TEACHER

1.How long have you been a teacher? How long have you been a teacher at Cherry Tree Primary and what do you teach?

OUTDOOR EDUCATION

2.What do you think of going outdoors with your class? Why?

3.Could you tell me during this academic year what kind of outdoors activities you had or you will have for your class/SCHOOL (could you mention the place, date, duration, activities, connections with the schoolwork/curriculum)?

a.In the school (the school yard)

b.Outside of the school local places

c.Further places

d.Residential trips

3.How does your school want to move forward with outdoor learning? What would you like to do more/less? Why are you not doing more outdoor activities?

4.Have you undertaken any professional development related to outdoor education at Wakehurst? In other settings?

5.How do health and safety concerns impact on what outdoor activities you do? Who is responsible for health and safety and risk management?

WAKEHURST PLACE AND CHERRY TREE PRIMARY RELATIONSHIP

6.When did your school first become involved with Wakehurst Place? How many years have you personal been involved with visits to Wakehurst place? What do you think about the relationship of your school with Wakehurst Place

7.Do you think there is something different at Wakehurst Place than in other outdoor settings? Can you give an example of where Wakehurst Place has made an impact on the school?

8.Could you mention two things that may help and two things that may make difficult this relationship.

9.Do you have any special relationship with Wakehurst teachers? How did it developed? What are the benefits of this relationship. What do you think about the support of Wakehurst Place to your school/to you in relation the visit.

10.Do you think you have changed anything as a professional during the collaboration of Wakehurst with your school?

THE PLANNING MEETING

11.Can you briefly tell me things you discussed during the planning meetings? Do you think there would be a big difference if you did not have the planning meeting? Or, how important it is to have the planning meetings? Did you had any fixed ideas about the activities for the visit? Did you discussed with the Wakehurst teacher the activities you will do in the classroom? Did he ask you for any help/advice?

12.Did you learn anything from the meeting?

13.Did you do any activities in the classroom before the visit? What did you do? How you planned the activities?/what factors facilitated this if not, what factors hindered this.

14.Did you do any activities after the visit? What did you do? How you planned the activities?

15.Are this visit activities related to any curriculum units? Which ones?

LEARNING DURING THE VISIT

16. Do you remember anything from your previous visit to Wakehurst? Have you learned anything for that visit? Have you changed anything frm the things you do done as a result of that visit?

17.What do you think were the outcomes of this visit for pupils? Do you have any evidence of the outcomes of the visit? Did you have any learning outcomes in mind prior to the visit? If yes did you determine whether these were achieved following the outdoor activities?

18.Do you think that there is anybody else learning during the visits to Wakehurst Place apart from the pupils? Have you learned anything during this visit? What were you thinking, what were you feeling, what were you doing?

19.What did you enjoy from the visit? What you did not enjoy from the visit

ENVIRONMENTAL ISSUES

20. what do you think about teaching about the environment?

20.Do you think there was anything taught during the visit related to environmental issues? When? How?

Knowledge

21.Did you learn anything new about caring for the environment/nature/plants and animals, the world around us during your visit? Where were you and how did you learn these things?

Attitudes

22.Have you changed the way you feel about the environment as a result of your visit? If so, how have you changed? Was there a particular part of the visit that made you change how you feel? Where was it?

Behavioural intentions

23. Do you think what you learned during this visit will change what you do for the environment? If yes what do you think you will do

24.Has your collaboration with Wakehurst Place made you change your perception and attitude to the environment? If yes please explain when and how.

RECOMMENDATIONS FOR THE FUTURE

25.Do you think there was something that could improve from the visit?

7.4. Interview questions for Wakehurst educators

BACKGROUND OF THE EDUCATOR

1. How long have you been an educator at Wakehurst Place? Could you please describe briefly what is your background and why you decided to become an educator here? How many years have you been a teacher?

OUTDOOR EDUCATION

2.If you were a teacher in the past could you please tell me if it was easy to change from being a classroom teacher to teaching outdoors? Was there anything that was particularly helpful at Wakehurst for you to teach outdoors?

3. What do you think about pupils having experiences outdoors in terms of their school education? Do you think Wakehurst Place is different from other outdoor education settings? In what way?

WAKEHURST PLACE AND CHERRY TREE PRIMARY RELATIONSHIP

4.Have you been educating before, Cherry Tree Primary pupils? If yes can you please tell me if there is sth different in the relationship of Wakehurst Place with Cherry Tree Primary? Have you developed any special relationship with the schools' teachers? Could you say a bit more?

5. Have you learned something during this collaboration? Do you think you have changed anything as a professional during the collaboration with Cherry Tree Primary?

6. Can you think of anything that helps the relationship of Wakehurst Place with Cherry Tree Primary? Can you give instance of where Cherry Tree Primary has made an impact to Wakehurst?

THE PLANNING MEETING

7. Can you briefly tell me things you discussed during the planning meetings? Do you think there would be a big difference if you did not have the planning meeting? Or, what do you think about the planning meetings? How do you decide what are the appropriate activities for the visit? Are the visit activities related to any specific curriculum unit? Which one?

8. Did you discussed with the teacher the activities he will do in the classroom? Did he ask you for any help/advice?

LEARNING AT WAKEHURST PLACE

9. Can you please tell me 3 things that you have learned as a professional or as a person at Wakehurst Place? Where did you learned them? How did you learned them?

10.What were the outcomes of the visit for pupils? Do you have any evidence of the pupils learning during the visit?

11.Do you think that there is anybody else learning during the visits to Wakehurst Place apart from the pupils?

12.Have you learned anything during this visit? What were you doing, what were you thinking, how did you feel?

13.What did you enjoy most from this visit? What did you enjoy less from this visit?

ENVIRONMENTAL ISSUES

14.What do you think about teaching environmental issues at Wakehurst Place? Do you incorporate these issues in the school activities at Wakehurst? How often? Do you prefer mentioning local environmental issues or do you make inks with global issues as well? Could you mention some examples please?

Did you teach any environmental issues during this visit?

15.What are some of the things you learned about caring for the environment as a teacher at Wakehurst Place? Where and how did you learn these?

16.Has your collaboration with Wakehurst Place made you change your perception and attitude to the environment? If yes please explain when and how.

17.Do you intend to be more active in relation to environmental issues in the future? Please mention specific actions.

RECOMMENDATIONS FOR THE FUTURE

18.Do you think there something that could be improved during this visit?

7.5. Interview questions for volunteers

BACKGROUND OF THE VOLUNTEER

1.When did you become a volunteer at Wakehurst Place and why? Could you please tell me some things about your background?

OUTDOOR EDUCATION

2.What do you think about pupils having experiences outdoors as part of the school education.? Do you think Wakehurst Place is different from other outdoor education settings? In what way?

THE COLLABORATION WITH CHERRY TREE PRIMARY

3.Have you been a volunteer for a Cherry Tree Primary class visit before? If yes could you tell me if there is something different in the relationship of Wakehurst Place with Cherry Tree Primary? In what way? Have you noticed anything different on the behaviour of the pupils and teachers of Cherry Tree Primary?

4.What is your role during the visits?

LEARNING AT WAKEHURST PLACE

5.What do you think were the learning outcomes of the visit for pupils? Do you have any evidence of the outcomes of the visit?

6.What have you learned during the specific visit? What were you doing, what were you thinking, how did you feel when you learned this?

7.Can you please tell me 3 things that you remember that you ‘ve learned as a volunteer at Wakehurst Place? Where were you? How did you learned them?

8.What did you enjoy most from the specific visit?

Was there anything you did not enjoy/liked?

ENVIRONMENTAL ISSUES

9.What do you think about the way environmental issues are being addressed (when they are addressed) during the school visits?

10.Do you think there was anything taught during the visit related to environmental issues? When? How?

Knowledge

11.Did you learn anything new about caring for the environment during the visit? Where were you and how did you learn these things?

Attitudes

12.Have you changed the way you feel about the environment as a result of the visit? If so, how have you changed? Was there a particular part of the visit that made you change how you feel? Where was it?

Behavioural intentions

13.Do you think what you learned from your visit will change what you do for the environment? If yes what do you think you will do

14.Has your collaboration with Wakehurst Place generally made you change your perception and attitude to the environment? If yes please explain when and how.

RECOMMENDATIONS FOR THE FUTURE

15.What do you think should be improved from the specific visit?

8. Information on Wakehurst educators and school teachers

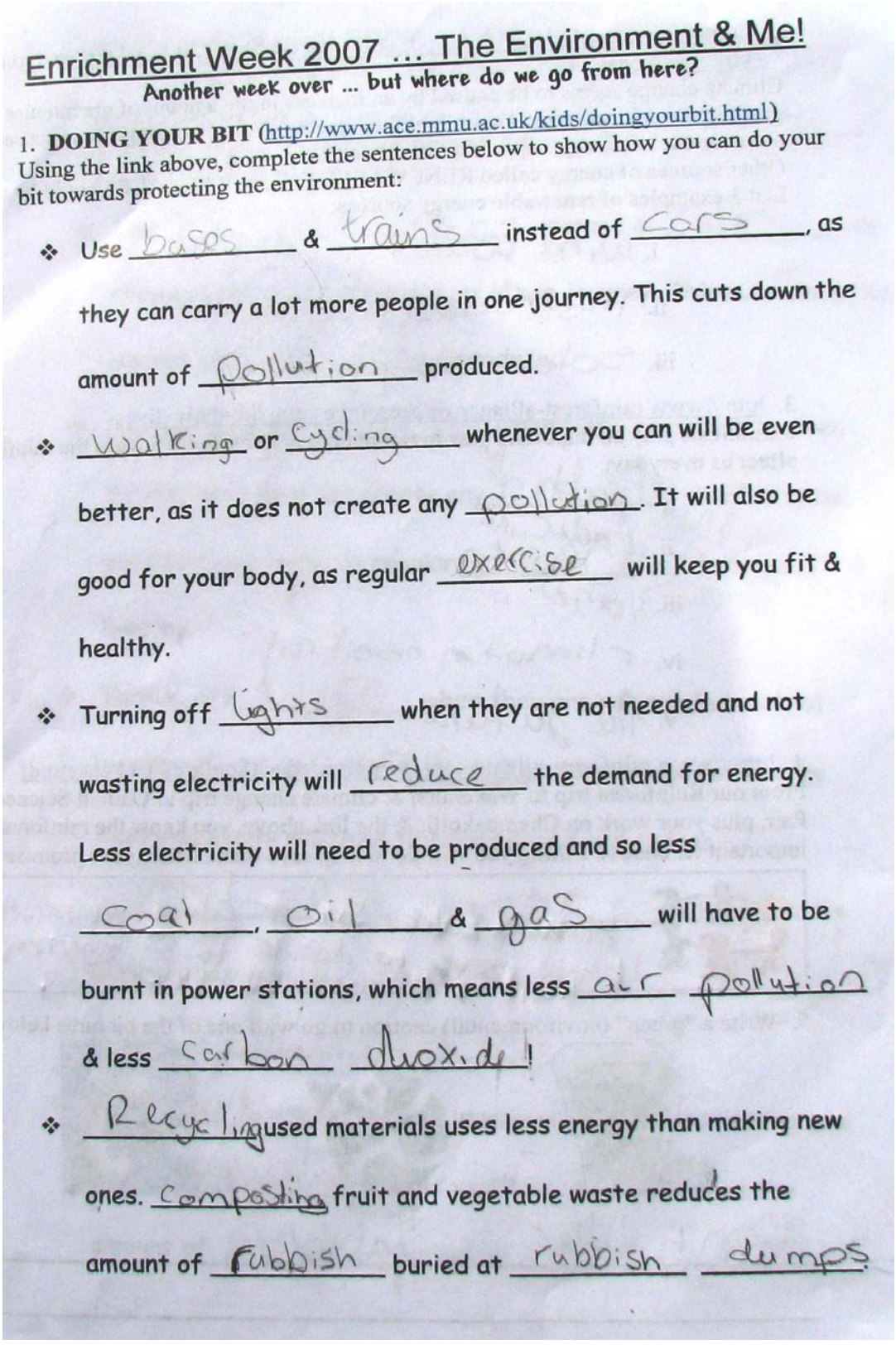
Table Appendix 8-1 Information on Wakehurst educators

Name	Qualifications	Years of teaching experience	Specialism	Years of working at Wakehurst
Michelle	University degree in Biology, PGCE	7 years in secondary school, then primary school, then teaching higher education: college, undergraduate, primary school science, teaching for PGCE courses.	Biology	4
Kelly	French and German European studies University degree	Primary teacher for some years, teaching French at primary school and home teacher	Languages	1 year as a volunteer Since summer 2006 educator
Heather	Primary school teacher for infants and nursery	6 years teaching at school then left to raise family	Geography	2 years +2 years volunteer before
Margaret	Secondary teacher	33	Fieldwork, ecology, science	5
Elsa	University degree in geography	Teaching English abroad, secondary school teacher geography, Special needs teacher abroad, 20 years at primary, 7-8 years headmistress	?	2 years
Juliet	Primary teacher	Teaching in primary schools	?	2 years
Valerie	Natural sciences Biochemistry	25 years working, Secondary and primary schools, special needs school	?	3 years
Andrew	3 years working at the nursery			
Michael	approx 20 years with arboretum unit			
Richard	Approx 15 years, Head of the Arboretum Unit			
Nick	Approx 20 years with arboretum unit			

Table Appendix 8-2 Information on school teachers

School	Name	Years of Teaching experience	Years of teaching at the school	Specialism
Cherry Tree Primary	Mr Mark Thomson	12	4	Maths
	Joyce	13	4	English
	Mrs Erica P.	29	15	
	John	1st	1 year just started working at Cherry Tree Primary	ICT
	Esther (has been a mature student)	3	First year at Cherry Tree Primary	English
	Karen	3	2	
Elm Tree Primary	Cecilia (Yr4)	7	6,5	Music
	Ariel	3 years (2006-2007 the 4th)	2	English
Oak Tree Primary	Anna	33	12	English and also music
	Amy	13	10	English
	Claire	?	?	?

9. Teaching materials, exercise for Cherry Tree Primary class 4 on the topic of Rainforests



Enrichment Week 2007 … The Environment & Me!

Another week over … but where do we go from here?

1. **DOING YOUR BIT** (http://www.ace.mmu.ac.uk/kids/doingyourbit.html)
Using the link above, complete the sentences below to show how you can do your bit towards protecting the environment:

- Use buses & trains instead of cars, as they can carry a lot more people in one journey. This cuts down the amount of pollution produced.
- Walking or cycling whenever you can will be even better, as it does not create any pollution. It will also be good for your body, as regular exercise will keep you fit & healthy.
- Turning off lights when they are not needed and not wasting electricity will reduce the demand for energy. Less electricity will need to be produced and so less coal, oil & gas will have to be burnt in power stations, which means less air pollution & less carbon dioxide!
- Recycling used materials uses less energy than making new ones. Composting fruit and vegetable waste reduces the amount of rubbish buried at rubbish dumps.

2. http://www.centrica.co.uk/files/pdf/edu_packs/KS2_BG_Electricity_and_the_environment.pdf

Climate change seems to be caused by an increase in the amount of greenhouse gases in the environment. About ½ of the increase in greenhouse gases is caused by our over use of energy, especially fossil fuels (gas, oil & coal).
Other sources of energy called RENEWABLE ENERGY SOURCES could be used.
List 3 examples of renewable energy sources:

i. wind power
ii. Hydroelectric power
iii. Solar energy.

3. http://www.rainforest-alliance.org/resources.cfm?id=daily_lives

Rainforests play an important part in our everyday lives. State 5 ways the rainforests affect us everyday:

i. food
ii. Medicine
iii. homes
iv. Climet control
v. The futer

4. http://www.rainforest-alliance.org/programs/education/kids/fact-sheet.pdf

From our Rainforest trip to Wakehurst & climate change trip to Oathall Science Fair, plus your work on Chembakolli, & the link above, you know the rainforests are important … choose 1 thing you will do to help save them. Make your promise here:

Have a bake sale or school fundraiser to raise money to donate to an organization that works to conserve rainforests

5. Write a "green" (environmental) caption to go with one of the pictures below:

Dont litter, use the bin!